

Research Article

The Effect of Using Origami to Reduce Aggression and Increase the Patience of 10-12-Year-Old Students

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Abstract

Nowadays, due to many factors, children show a lot of aggression. One of the best ways to teach children accurate behavior is to use entertainment. One of the best games that increase patience is origami. For this purpose, the present study examines the effect of origami on reducing anger and increasing patience in children aged 10 to 12 years. This research is quantitative. The data were obtained from the experiment on two control and experimental groups of 30 male students. The statistical population, at first, all male students between the age of 10-12 in the city of Karaj were considered for the academic year 2023-2024. Then, by cluster sampling, it was reduced to one school and finally, randomly, to two classes. The treatment of the control group was done with the teacher talking to the students and showing some videos about anger control. Modifications were made in the experimental group using the continuous practice of making origami. At the beginning and end of the academic year, both groups were given a questionnaire to assess the level of aggression, and the average scores of both groups were calculated. After the measures were taken, the students of the experimental group showed less desire to use violence. According to the questionnaire and observations, the results showed that using origami increases patience and decreases children's aggression.

Keywords

Origami, Aggression, Patience, Learning Process

1. Introduction

1.1. Research Problem

In the 21st century, when children are dealing with smart devices and different technologies, they are less likely to deal with games and tasks that require building and manipulation. The range of toys that children would have had 100 years ago is far more limited than children in Western society have today. As well as the favorite teddy bear or stuffed doll, which can be seen as a substitute attachment figure, children now

have an enormous range and variety of specially constructed toys which can play music, make sounds, talk to them, and even interact with them. There are also many technological toys, from the dummy mobile telephone to the home computer. These toys can bring potential dangers, and research has studied the negative effects of violent television and computer games on children.

There are two theoretical approaches we can apply to this issue. First, according to social learning theory children will learn the actions they observe or participate in a virtual reality

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situation and then transfer them to real-life contexts [3]. Digestion and assimilation of new experiences are done either through integration with the existing mental structure (internalization) or by creating and developing new mental structures (externalization). New mental constructions are created if the existing mental construction is not sufficient or appropriate to understand the new event [7]. Sociocultural approaches also suggest that children may learn important lessons about violence through engaging in violent computer games, these being a more active form of learning than the more passive form of violence experienced on television. The second approach follows psychoanalytic theory and argues that playing aggressive games has a relaxing effect by channeling any latent aggression in a cathartic manner, thus having a positive effect on children's behavior.

The social learning theory approach to the effects of watching violent behavior starts from a well-known study by Albert Bandura and his colleagues in 1961, in which some preschool children watched an adult hitting and being aggressive towards a large inflatable 'Bobo' doll, while others watched the adult playing with different toys in the room and ignoring the doll. When the children were later allowed to play in the room, those who had watched the violent adult imitated the aggressive behavior. As well as imitating the adult's actions, they also invented new forms of aggression towards the doll, such as pretending to shoot it with a toy gun [3]. Therefore, there are several factors that reduce children's resilience and tolerance threshold, such as games, or environmental factors such as family, financial, emotional, etc.

To better understand children's world, they should be observed while playing; Because children express their feelings, failures, and anxieties through play, as a result, play is a suitable tool to enter the world of children and better understand them and their problems [5]. For this reason, it is essential to observe the students in school. Because children, among their peers, express their feelings, emotions, and even anger more easily. Peers provide opportunities for socializing and developing relationships and a sense of belonging [4]. Therefore, if children want to get angry, they express it more easily at school and among their peers.

Most children and even adults are afraid to stop their anger; Because they consider it a weapon that supports them against the problems of this world. In their opinion, losing this defense means giving up, and instead of accepting that they have to overcome their anger, they prefer to be angry [11].

Anger is one of the most passionate emotions of childhood and adolescence in today's era, and its occurrence, which often manifests as aggression in children and adolescents, is a serious social problem that has increased rapidly in recent years. Almost 40% of Elementary and middle school students are dealing with the prevalence of sarcasm, harassment, or bullying in school, which in case of not paying attention to children's education, causes problems such as antisocial feelings and as a result dropping out of school, damage to children's empathy with Parents and classmates. Aggression is

an internal tendency and a part of the human behavioral treasury, which the child needs to learn to control.

Therefore, investing in teaching this during childhood means preventing possible problems for children in adulthood and influencing the future generation that will be raised by today's children. This investment and education must be done in all areas affecting the child's abilities and behavior. To understand the variable of anger, we need to distinguish the feeling of anger from the expression of anger. Intensification of anger is not only limited to situations of objective discomfort, but a person can also increase the dimensions and amount of his anger through imagination. This means that if a person continuously mentally focuses on an unpleasant experience and situation, his anger will intensify. On the other hand, suppressing or not accepting anger is also harmful to physical and emotional health and may turn into depression and weakening of the body's immune system (due to excessive chronic hormones such as cortisol).

Behavioral reactions caused by this emotion can include a diverse range of behaviors: sometimes it leads to external reactions such as physical and verbal aggression, and sometimes it is internal and manifests itself in the form of hostility, malice, and distance from the source of anger. Among the disadvantages of anger is the feeling of helplessness, loneliness, isolation, and its manifestation in the form of aggression. Aggression refers to a behavior whose purpose is to hurt another person or destroy people's property, that is, if the behavior is accidental, it is not considered aggression. Social psychologists consider the act of aggression as a conscious behavior whose purpose is to cause physical or psychological pain in a person or other people.

Aggression can be interpreted as a means by which the child projects its repressed objects onto the other party. Aggression has different types: passive or active aggression, hostile or reactive aggression, physical and verbal aggression, and communicative aggression. In young children, aggression is more of an instrumental type, because children have a sense of ownership of their belongings. In childhood, aggression is generally due to the feeling of failure and the impossibility of accessing inner desires and needs. Because of the inability to tolerate failures and failures, the child cries easily and probably throws the tools or objects in his hand. Over time, verbal aggression replaces physical aggression, but in the early years of school, aggression is often expressed in a hostile way, such as criticism, cursing, or conflict.

Since the foundations of emotion regulation are laid in childhood, the best time to teach anger management skills is during childhood. Anger can be managed, controlled, and treated in different ways, such as the religious approach, cognitive-behavioral approach, play therapy approach, and art therapy approach [12].

Although rates of youth violence have begun to decline. Childhood aggression and youth violence have become more pervasive in the public consciousness over the past two decades than has ever been true before. One fairly obvious con-

clusion to be drawn from the literature on youth aggression and violence is that such behavior represents a significant problem in school. As well, a broad literature has found that children who display these types of aggression are at considerable risk for poor school adjustment, school dropout, and delinquency in childhood and adolescence.

Elementary school students who engage in overt aggression are also inattentive, frequently off-task, and disruptive in the classroom. Whether aggression is measured in elementary school, middle school, or even as early as first grade, it remains a powerful predictor of educational difficulties (low achievement, low motivation, poor adjustment) and early school leaving in high school [6].

Therefore, due to the fact that 21st-century children are more engaged in violent games and less involved in various manipulations, their tolerance threshold is reduced and they get angry easily. In elementary schools, it is observed that children use the power of their anger to solve problems and that excessive use of anger among children aged 10 to 12 years has various harms. Because children in this age range have high flexibility to shape their personality. One of the ways to increase children's tolerance threshold is to do activities and games that require a lot of time and patience; For example, movement games, manipulations, etc. The reason is that in play, children can discover the world without risk [4]. One of these games is origami.

Origami is more than a form of art. Origami is actually an interesting blend of art and science. Because so much logic is involved in deciphering a diagram and so much mathematical principles are comprised in the creation and folding of a model, origami clearly has the characteristics of science. Origami, like music, permits both composition and performance as expressions of the art. Origami is a unique sculptural art and that each model must be folded individually, thus acquiring uniqueness. Taking into consideration the issue of shaping and adding final touches to a model, as well as choosing the paper or combination of colors, we can safely admit that origami helps develop artistic and esthetic sense. Last but not least, there are the cultural elements and historical background surrounding this art. Any learner that assimilates this art comes to admit that it stands for discipline, order, patience, perseverance, calm and reflection, and that these values are part of the art and the technique of paper folding [1].

Not only the activity of the right hemisphere of the brain but the simultaneous activity of both the right and left hemispheres during the challenging activity of origami increases children's creativity. Teaching the art of origami as an old Japanese art is used in world education to teach math and geometry and increase spatial geometry skills and manual skills. The attraction of origami is that, in addition to being considered an artistic activity, it is also considered a cognitive problem-solving process due to the precision that must be taken in the folding stage. Origami has a high capacity to develop imagination, and mental imagery and increase stu-

dents' creativity. Origami is associated with fun, but it is not limited to entertainment, rather, origami training has educational consequences such as increasing concentration, accuracy, patience, and tolerance, strengthening social skills, helping math education, and fostering creativity [9].

1.2. Literature Review

In the last decade, more attention has been paid to the use of origami in the education and treatment of students with problems. However, extensive research has not been done in this field yet. On the other side of the coin, the results of the conducted research show that the use of origami in the process of education and treatment has positive effects and improves students with problems. For instance:

Findings by Lanjekar and Kale under the title «A study to assess the effectiveness of origami therapy on anxiety towards hospitalization among children admitted in pediatric wards of selected hospitals from sangli, Miraj and Kupwad corporation area» stated that administration of origami therapy on anxiety towards hospitalization among children was effective in relieving anxiety [8].

Andreass in a survey under the title «Origami art as a means of facilitating learning» said that the research aims at revealing the impact that this art can have within the educational process at two levels: behaviour (significant improvement in the teacher-student relation) and learning (origami really helps children to develop sense and sensibility) [1].

Rezaei and Ahmadi in the article entitled «The Effects of Teaching Origami on Creativity among the 5th Grade Male Students» have stated that the findings of this study confirm the effects of teaching origami on components of creativity including fluency, flexibility, originality. Despite the increase in the average scores of elaboration in the experimental group compared with the control group, this difference was not statistically significant [9].

Pakgohar and partners in their article entitled «Effect on the Using of Educational and Performance Measurement Origami Tool on the Students' Creativity and Self-esteem of Fourth Grade Elementary School Girls» acknowledged that the results of covariance analysis showed that the effects of origami training significantly increased creativity and self-esteem. Based on the results of the present research, origami training increases students' creativity and self-esteem in answering the questions of creativity and self-esteem tests and increases students' performance. Therefore, to increase the level of creativity and self-esteem, origami training is recommended [13].

Sarpooshi and partners in a survey under the title «Dynamic geometry software test based on spatial skills on spatial visualization and learning math lessons and comparing its effectiveness with origami in sixth-grade elementary school students» said that teaching mathematics with the help of geometry and origami software can improve students' spatial visualization and mathematics learning [10].

According to the research and results, it can be concluded that the effect of origami on controlling the anger of 10-12-year-old students has not been investigated.

1.3. Research Purpose

The purpose of this research is to investigate the effect of origami training on anger control in children aged 10-12. Considering the fact that a lot of anger and aggressiveness have been observed by children in school, and also, if children are not taught anger control at an early age, many negative consequences will await them in adulthood; This topic was selected for research.

On the other hand, since in making and designing origami, patience, accuracy, and delicacy are criteria, it is a good way to teach students how to control anger and manage various situations. Because it is possible to teach students along with fun and games. In addition, because the age range of 10 to 12 years is the last years of a person's childhood and his/her entry into adolescence, it is considered consequential years for strengthening various skills. Therefore, children of this age were selected for the research. Accordingly, in the present study, the following questions have been examined:

Q1: Does using origami decrease students' anger and increase patience?

Q2: How effective is origami learning method in sixth-grade students' learning?

Q3: Will the use of origami in the teaching process make the class and teacher's teaching method more attractive?

To provide answers to these questions, the research has the following structure. First, the research method and research findings are presented. Finally, it discusses the results and suggests ideas for future use on the subject.

2. Method

2.1. Content Selection

According to the observation of students' aggression in school, it was decided to work on reducing students' aggression because it will have bad consequences in the long run and their adulthood. Because the school officials had talked to them about this action of students many times and it had no effect, so it was decided to choose a method other than lectures to solve this problem. In addition, the coronavirus pandemic period also affected the increase in students' aggression. At that time, children faced more restrictions to play with their peers, and as a result, they turned to computer and Android games. Also, according to the results of various research, the more violent computer games are used, the greater the level of aggression [2].

On the other hand, because in art education classes, teachers can use different methods including music, drawing, coloring, calligraphy, theater, and origami, so there is no limit to the choice of method. On the other hand, it is necessary to pay

attention to points such as the number of students, age, gender, and required tools. For this reason, considering various aspects, the origami method was chosen. The main reason is that patience plays a key role in designing and making origami, and it is considered a suitable method to strengthen the skills of patience and tolerance in students. In addition, there is no need for many tools to make origami. Rather, a large number of students can be taught with just a few sheets of paper. Moreover, because the design and construction of origami are associated with play and laughter, the teacher can hide his therapeutic purpose in the game and indirectly increase the patience of the students.

Due to the fact that strengthening the skill of patience is done gradually and requires a long time, one academic year was chosen. Each week, an art class was dedicated to making origami, and the origami varied from simple to complex. 60 male students aged 10-12 years were selected as the statistical population. Because this age range is really important due to the person's entry into adolescence. The students were divided into two control and experimental groups of 30 people. It should be noted that all the conditions of the two groups, including the classroom environment, class time, etc., were considered the same, and there were no students with disorders in any of the groups.

The origami made included a wide range of subjects. Origami like animals, vehicles, airplanes and jets, dragons and mythical creatures, etc. were made. At the beginning of the construction and design process, it seemed difficult and boring for most of the students, but gradually, when they managed to finish them and see the result of their efforts, it became enjoyable for them.

2.2. Collecting Information

The present study is quantitative in nature. The collected materials have been obtained from two types of field and library methods. The library method has been used to study various sources art activities and then compile the research text. Also, the field method has been used to prepare the training methods and also to conduct questionnaires. Available data were collected from experiments on control and experimental groups. The statistical population, at first, all male students in the age of 10 to 12 in the city of Karaj were considered for the academic year 2023-2024. Then, by cluster sampling, it was reduced to one school and finally, randomly, to two classes of 30 pupils. None of the classes had students with a range of disorders. For both groups, the same subject matter (how to control the anger) was selected. It should be noted that the environmental conditions of both groups are explained equally.

2.2.1. Questionnaire

One of the ways to understand the level of aggression of students is to use their own opinions through a questionnaire. Because through the questionnaire, it is possible to check a

large number of students in a short time. Also, because students can answer questions anonymously, their answers will be more honest.

Therefore, to measure the aggression level of students, a questionnaire with 20 questions was designed. For each question, a rating scale of very high, high, medium, low, and very low was considered so that initially, the students would evaluate their level of aggression and thus achieve self-knowledge. For each option, a specific score was defined. Very high 5, high 4, medium 3, low 2, and very low 1 were considered. At the end, the questionnaire score of each person was calculated out of 100 and the average of the whole group was checked.

Eventually, the initial questionnaire was given to both groups to answer and, the results of both groups were compared. After working on both groups for 9 academic months, the same questionnaire was given to the students again to re-evaluate themselves. The questionnaire results of the two groups were also compared.

2.2.2. Observation

Another way to analyze students' behavior is to observe them. Because people show different behaviors in different situations. Remote observation makes it possible to observe the real behavior of students. Because when students do not know that they are being observed, they show their behavior more easily.

Therefore, in addition to the questionnaire that was answered by the students, their behavior was also examined and observed during the inter-class hours and in the class hours. Both groups were observed remotely through cameras. Their aggressive behavior was recorded.

According to the investigations, it was observed that students lose control of their anger with the smallest stimulus and lack patience and self-control in the face of stimuli. They have a lot of desire to fight and aggression, and they do not consider behaviors such as cursing, beating, teasing, etc. to be unpleasant. After performing the necessary exercises, the students' behaviors were again observed and recorded to be compared with the observations of the judges before the actions.

2.3. Control Group

The students of the control group learned to control anger with the usual method, that is, the teacher talked about anger and its destructive effects in adulthood. In such a way that

every week, one session of the social studies lesson was dedicated to discussing this matter. On the other hand, some educational films and animations about anger and its control were also shown to students.

2.4. Experimental Group

The experimental group was taught using origami. In this way, the students of the experimental group strengthen their patience by using origami. Then, the teacher gradually talked to the students about controlling anger and its destructive effects in adulthood.

Each week, one session of art class was dedicated to making origami. Various origamis were made, from simple to complex. On the other hand, because the students were boys, the origami categories were also chosen according to their interests. Origami includes animals, vehicles, planes, jets, dragons, and mythical creatures. At first, because it was difficult for students to design and make origami, they did not show much interest. But gradually, with the coordination of their two cerebral hemispheres and also, the creation of new cognitive structures to make origami, the process became easier; As a result, they have shown more enthusiasm to make them.

On the other hand, during the meetings held with the student's parents, the matter was explained to them and they were also asked to encourage the children during this time. Therefore, the students showed their crafts to the parents and were applauded. This made them more enthusiastic. In addition, during social study lessons or any other situation that occurred, a conversation was held with the students to talk about anger control or situations where they controlled their anger and what the result was.

3. Results

3.1. Questionnaire

At the beginning of the academic year, in the initial questionnaires, both control and experimental groups chose options with high numbers. This means that the students rated their aggression very high. However, after the measures were taken for the two groups, the answers in the second questionnaire were changed. This change was much greater for the experimental group.

Table 1. The total and average scores of the questionnaires of the control and experimental groups.

Groups	Number	Total Initial Scores	Initial Average	Total Secondary Scores	Secondary Average
Control	30	2300	76.66	2157	71.90

Groups	Number	Total Initial Scores	Initial Average	Total Secondary Scores	Secondary Average
Experimental	30	2282	76.06	1661	55.36

Table 1 shows the total and average scores of the questionnaires of the control and experimental groups. According to the results of Table 1, the average scores of the selected options of both control and experimental groups in the initial questionnaire were almost the same. This means that the students of both groups choose the high and very high options. However, after the actions taken for both groups for 9 academic months, their average scores on the questionnaire changed.

For the control group, there is no significant change in the average scores, i.e., the options chosen by the students for the level of aggression. Because the average has decreased from 76.66 to 71.90.

But on the other hand, for the experimental group, the average change can be examined and observed, because the average score of the questionnaire of the experimental group decreased from 76.06 to 55.36. The decrease in the average scores of the selected options means that the students of the experimental group, in the second questionnaire, have changed their answers from very high and high options to medium, low, and very low options.

3.2. Observation

During 9 academic months, the students of both experimental and control groups were observed many times through CCTV cameras. During class hours and break times were directly observed and their behaviors at home and with other people were reported to the school through their families.

For students in the control group, there was no significant difference in behavior. Only the desire for physical and verbal aggression in them decreased a little. So that the number of fights between students was decreased.

On the other hand, aggressive behaviors, such as fights, verbal fights, destruction of school property, etc., were significantly reduced in the students of the experimental group. According to the observations, the patience of students increased in different situations and they turned to violence less. According to parents' reports, students' behavior with their brothers and sisters also changed and they showed calmer when facing unpleasant situations.

3.3. Research Questions

Q1: Does using origami decrease students' anger and increase patience?

Findings about Q1: According to the results of questionnaires and observations from both groups, it can be concluded that learning origami increases students' patience and reduces

their anger. Because patience and skill play a key role in making origami. Therefore, by learning origami, students' anger can be reduced and their patience can be increased in unpleasant situations.

Q2: How effective is origami learning method in sixth-grade students' learning?

Findings about Q2: Since learning origami reduces students' anger; This increase in patience also helps to improve the learning process of students. Because their concentration increased during the class hour. On the other hand, learning origami increased the level of students' learning due to the greater coordination of the two brain hemispheres and the creation of more cognitive structures.

Q3: Will the use of origami in the teaching process make the class and teacher's teaching method more attractive?

Findings about Q3: Considering the increase in students' patience and also, the improvement of brain function, and the increase in their learning level, it can be concluded that learning origami has little effect on making the teacher's teaching more attractive. Because learning origami helps to improve the performance of students to make different items. Therefore, they can design different handmade stuff for different subjects, such as math, science, etc., and make the learning process more attractive for themselves.

4. Conclusion

In the 21st century, when violent computer games are easily available to children, children are more prone to violence. On the other hand, since violent behaviors are seen in some parents, children may also imitate their parents and show violent behaviors. On the other hand, teachers should try to reduce children's violence due to their important educational role. In addition, learning through play makes children's learning process faster and improves the process of solving unpleasant behaviors. Violent behaviors in adulthood can cause many problems for a person in life and society.

Therefore, teachers can combine teaching or therapeutic methods with various fun games and activities to change children's unpleasant behaviors. For example, one of these methods that does not require special tools and the teacher can use it in a class with a high population is origami. Due to involving two hemispheres of the brain at the same time, origami creates a challenge for the child and gives him the pleasure of playing and having fun. Also, due to the importance of patience in the process of making origami, it is considered a suitable way to reduce anger. For this purpose, the current research sought to find the answer to whether using the origami method increases students' patience and

reduces their violence or not.

According to the results of the questionnaire and observations of the behavior of the students of the two control and experimental groups, it can be concluded that origami reduces children's desire to use violence in various situations. Because it increases their patience and also teaches them to interact with each other. On the other hand, because it makes the two hemispheres of the brain more coordinated, it also improves the learning process of students. Also, it makes learning more enjoyable. As a result, according to the data analysis of questionnaires and observations, it can be stated that origami reduces children's violence and increases their patience.

5. Recommendations

According to the research results, origami reduces children's anger and increases their patience; teachers, curriculum planners, and even parents can combine the learning process and modify children's behaviors with this method. In the following, there are some suggestions for using this method.

- 1) As much as possible, teachers can use various games such as origami in their teaching process. Because it makes the class more enjoyable and makes the students more active in the learning process.
- 2) Due to the fact that in making origami, both hemispheres of the brain are activated, even this method can be used in the process of teaching adults. Because it strengthens the brain and imagination.
- 3) Curriculum planners and educational designers can change textbooks according to educational games, especially origami, and combine educational content with them. Because if the process of correcting unpleasant behaviors is carried out imperceptibly and during learning, they will have a better result.
- 4) Considering the fact that origami does not require special equipment and can be implemented with a high number of students, it can be used in most classes. Therefore, teachers with the least facilities can have the most efficiency and make the learning process of students more attractive.
- 5) Considering that children of the 21st century play a lot with computers, it is necessary to strengthen their manual skills. Therefore, it is suggested that teachers include games that need to be made, such as origami, during their teaching.

Abbreviations

CCTV Camera Closed-circuit Television Camera

Author Contributions

Nima Asemani Barekat: Conceptualization, Data cura-

tion, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Writing - original

Fatemeh Abdolmaleki: Conceptualization, Formal Analysis, Investigation, Methodology, Resources, Visualization, Writing – review & editing

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Data Availability Statement

The data supporting the outcome of this research work has been reported in this manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

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Biography



Nima Asemani Barekat is a graduate student at Farhangian University, Education Department. Since 2022, he is an elementary school teacher. Nima specializes in computers and had workshops for educating others on using new technologies and software to make creative educational content. Nima is a powerful force in the workplace and uses his positive attitude, discipline, and tireless energy to encourage others to work hard and succeed. For instance, Nima has been in charge of the executive committee of two university festivals and also the secretary of the university association in the comparative education field. Therefore, he is inquisitive about research in primary education and active learning methods. This is why Nima got a patent for some educational games and published 2 scientific articles. Nima is inspired daily by his passion for success. That is why he has won three festivals in the field of education



Fatemeh Abdolmaleki is a master's student at Kharazmi University in Curriculum planning. She completed her bachelor in elementary education from Farhangian University in 2024. Since then, she has been an elementary school teacher. She is passionate about her career. This is why she won two university festivals and She has become one of the best students in the National Olympiad. Fatemeh is obsessed with learning and become an innovative teacher. Thus, she published two scientific articles and two patents for educational games. Fatemeh is a creative person so she tries to make educational stuff and make the learning process more enjoyable for kids. She has tireless energy and this is her motivation for success.

Research Fields

Nima Asemani Barekat: Game-based learning method, Innovative educational content, Effect of artificial intelligence on teaching methods, Active learning methods

Fatemeh Abdolmaleki: Educational psychology, Game-based learning method, Creative curricula, Active teaching methods