Original Article

The effectiveness of lego therapy on the resiliency of gifted children

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Abstract

Introduction: Resiliency is one of the influential factors in the mental health of gifted children. The aim of this study was to the effectiveness of lego therapy on the resiliency of gifted children.

Materials and Methods: The statistical society of this study included all children aged 4 to 5 years who were at the lego education center in Tehran in the academic year 2018-2019. Among them, 30 children were selected by the convenient sampling method. Then they were randomly divided into two groups. The research instrument consisted of the Resiliency Questionnaire of Merle, (2008) and the Intelligence Scale of Stanford Binet Roid (2003). The experimental group received the lego bricks in 12 sixty-minute sessions. Data were analyzed by using covariance analysis.

Results: The results showed that training by lego bricks had a significant effect on the resiliency and subscale (self-regulatory, social ability, responsibility, and empathy) (F= 47.00, P<0.01).

Conclusion: Based on the findings, the training by lego bricks increases the resiliency of gifted children. Therefore, consultants and therapists can use the lego bricks method to improve the resiliency of gifted children.

Keywords: Gifted, Lego therapy, Resiliency

Introduction

Gifted and talented persons show tokens from high performance in some areas such as intelligence, creativity, artistry, leadership, and l fields of special education (1).

However, lack of awareness of professionals, educators, and parents about the characteristics of gifted children leads to interpersonal problems resulting in frustration gifted children and that the life of future leaders may be endangered (2). Research in psychology and educational sciences indicates that it should provide conditions to the God-given capacities of gifted children to reach maximum actualization. Today, there has been a particular emphasis on education in creativity (3). DeBono believes that individuals can be creative. They should be taught ways to think right (4).

In this case, all individuals would have obtained this ability to show from themselves creativity (5).

Creativity is a relatively complex phenomenon, and studying its attention to factors such as adopting an educational method of proportion to the growth of individuals is of

particular importance (6). Play increases the children's creativity in preschool (7).

One of the areas of development and nurture of creativity in childhood is Lego. Educational Lego classes are designed based on the philosophy of education with continued construct and experimental theory (8). Gauntlett has expressed that Lego bricks cause the creation of a new method to solve a new problem. The primary condition in this area is freedom and psychological security that the individual feels safe and has a sense of creativity from within the self. The Lego system encourages children to express all their internal ideas and act on them on their constructs because this system believes that a good idea leads to the production of other ideas (9). Lindsay, Hounsell and Cassiani believe that the use of Lego to reason utilization from the natural environment and naturalistic approach can be helpful and effective in increasing the generalization of education in children (10).

Tehrani believes that educational Lego has a significant effect on increasing the practical intelligence and creativity of 4 to 6 years children (11). On the other, internal coordination becomes seen in many gifted children (12). Researches show that fatigue and downheartedness are prevalent in gifted children, and often, communicating with peers is difficult for gifted children (13). Factors such as intelligence, problem-solving skills, self-awareness, source of internal control, and sociality are considered from personal protective factors that effectively increase resiliency (14). Resiliency is one of the factors influential on mental health (15). The term resiliency means the ability to develop, reach maturity and maturation, and increase capability against adverse conditions. These conditions possibly include biological abnormalities or environmental barriers (16). Individuals with resiliency have the ability flexible thinking skills, the ability to vote independently, the ability perseverance and endurance, the ability conflict resolving skills, the ability to behave to respect themselves, the ability to be involved and communicate meaningfully with individuals, and having a healthy support network (17). According to Walsh, individuals with resiliency in fragile events and crises have more felting purposeful in life; and increase their compassion and kindness relative to the challenge of others (18). In lego therapy from natural opportunities and

children's interest in-game for creation motivation takes help for behavioral changes, and this game is very appropriate for practicing communication and social support, social problem solving, and conflict solving skills (19). Lego therapy is a participatory play therapy aimed at social skills therapy that allows children to participate together to build lego patterns (20). Akbari (2015), in a study, showed that the educational Lego had a positive effect on the social skills and creativity of children (21). Legoff, Cuesta, Krauss and Baron-Cohen believe that lego therapy as an intervention approach with using children's interests in-game is for increase social skills, social worth, trust in self and others, and children' self-leadership. They express that the aim skills in lego therapy include verbal and non-verbal communication, sharing, participation, shared attention, justly work division, and turn observance (22).

Bulmer & Smith (2011) express that use of Lego provides an opportunity for group members to build sample models using collective intelligence. Furthermore, during the discussion about making these models, interactive applicable was established between students, and the complexities of the project became simpler (23). The findings Tazkereh Tavassoly showed the influence of lego therapy in improving social skills and reducing social interactions problems in children with high-functioning autism (24).The results obtained from Akbari and Rajab Blokat's research showed that the educational Lego significantly increased children's social skills and creativity and positively influenced the subscales of cooperation and self-control (25). Barzegar Bafrooei and Amogadiri say that the importance of playing with Lego can be emphasized on children's social skills and be used as an effective method (26). According to the role of resiliency in the lives of gifted children, and considering that yet research has not been on the effect of lego therapy training on the resiliency of these children, a study is needed that study the effect of this training in two groups; In this way, strategies can be considered to increase resiliency in gifted children. Therefore, this study aimed to investigate the effect of lego training on the resiliency of gifted children, and according to what has been said was trying to answer this question: Does lego therapy affect the resiliency of gifted children?

Materials and Methods

The statistical population included all gifted children 4-5 years who were present at the Educational Lego Institute in Tehran in the academic year 2018- 2019. The number of individuals was 51, distributed into two classes. The sample size in experimental researches of fifteen individuals is appropriate for each group (27). For this purpose, 30 children were selected by the available sampling method and randomly were placed into two groups of 15 people. Inclusion criteria to research were child to be in the age range of 4-5 years, acquisition IQ score higher from 120 in the Stanford- Binet test, and absence of the child in similar intervention as simultaneously. Exit criteria were absent of more than two sessions in the training course and no desire for the child to the presence in play therapy sessions and its continuation. First, necessary licenses were taken from the Islamic Azad University, Science and Research Branch to introduce the educational lego center.

After announcing authorities' readiness and holding a justification meeting for children's parents, the parents obtained written consent. Tests were performed on children and parents, and their scores were recorded for the pre-test. Then, for the experimental group, the independent variable, that is, mean lego therapy intervention, was done in 12 sessions of 60 minutes and one session per week as a group. The control group was waiting for their turn. After completing these training sessions according to the pre-test method, the resiliency score was measured again for both control and experimental groups. In order to comply with the ethical considerations of the subjects, their questionnaires were coded, and ethics fundamental such as information remained confidential, and secrecy was fully observed. Lego training sessions were compiled based on the training pattern of the C cycle, known as the C Cycle that included four steps connect, construct, contemplate and continue. The educational pattern was taken from the MFE lesson plan. This package can be used for kindergartens. In this course, children in the game reinforce their basic skills and attitudes, such as altruism and respect for the environment (26). The training of this program was with way Behavioral. The data were analyzed using covariance analysis and SPSS software. This research with code IRCT20190308042969N1 in the site clinical trial researches has been recorded. The educational content of the course is shown in Table 1.

Table 1. Content of training sessions Lego therapy on the resiliency of gifted children

Session	Title	Content of sessions
1th session	Playful cat	The role of relief services, helping other individuals or animals if needed, designing and building a tool for help, solving the problems and needs of others
2nd session	Park burned	Stimulate curiosity about the cause of occurrence of accidents and the function of different tools, getting to know with different rescue tools in against fire
3rd session	Lego City	The importance and role of the police in urban life, the importance of Law (talking about right and wrong work), the role of society individuals in maintaining discipline
4th session	My beautiful house	Learn to use the house, understand the difference between the outside and inside (different parts) of the house
5th session	My room	Getting to know different parts of the house, getting to know the concept of personal privacy, get permission for entrance to the room.
6th session	Do not worry	The importance of attention to environment and sounds of around, increase a sense of empathy and attention to the needs of others, helping to other people or animals if needed
7th session	Farm animals	Getting to know with the farm animals (domestic), the animals that live near to us and are helpful for us
8th session	Hungry animals	Getting to know the farm animals (domestic), the ability to describe their appearance characteristics, and food
9th session	Prison Break	Understanding the concept of security from different aspects in society, getting to know the concept of right and wrong, law and order, understanding the role and responsibilities of police agents
10th session	Extinguish the fire quickly	Explain the role of firefighters and people when a fire, cognition the feels in sensitive situations (emergencies)
11th session	Where do I live?	Learning different biologies environments and their weathers, classification based on one or two characteristics, comparing differences and similarities
12th session	Help the animals	Different animals in extinction, getting to know with different places of living (biology environment) of animals, the effect of human life on animal life, stimulating feelings of pity and empathy, the importance of cause and effect relationship

Research instruments

A) *Stanford Binet Intelligence Scale:* This questionnaire is the new version of the Tehran intelligence test- Stanford Binet was taken from the fifth version of the Stanford Binet intelligence test, which was made by Roid in 2003 and standardized in 2006 by Afrouz and Kamkari. This version can do IQ in the age range of 2-85 years. This tool includes both verbal and non-verbal parts; each of the mentioned parts has been considered five subscales of fluid reasoning, knowledge, quantitative reasoning, visual-spatial prosses, and working memory. The mean of each subscale is ten, and its standard deviation is 3. Validity between 0.84 and 0.89 was extracted between the ten subscales of this intelligence test. The coefficients calculated for this tool indicate that this tool has high validity in the parts of subscales and combined scores (28). In research, Kamkari, Afrouz, Dawaei, and Shokrzadeh specified that the new version of the Tehran intelligence test- Stanford Binet has diagnostic reliability in students with learning disabilities. The results showed that nonverbal fluid reasoning with 0.88 has the highest internal homogeneity between factors, and nonverbal quantitative reasoning with 0.68 has the lowest internal homogeneity (29). In addition, Javidnia, Movallali, and Kamkari (2013) specified that this tool has psychometric properties in students with learning disabilities in Tehran (30).

B) *Social-Emotional Assets and Resilience Scale:* This questionnaire was constructed by Merl to evaluate social and emotional abilities of positive and resiliency. This scale has 52 questions and four subscales. Subscales include are from self-regulation (22 questions), social ability (13 questions), empathy (6 questions),

and responsibility (11 questions). Scale options are answered as four options Likert (no time, sometimes, often, almost always). The answer time considered for questions is 15 to 20 minutes (31). Doner et al. performed this questionnaire on 1400 children, and the validity coefficients of the test/post-test (at the distance of time two weeks) for the child form was 0.81 and reported the reliability of the test between 67 and 72%.

Hosseini Yazdi determined the validity and reliability of this questionnaire on two groups at two different times and reported the internal validity coefficient equal to 0.78. Also, by the test-retest method, during the twice performance with the distance of one month on a sample of 23 people, correlation coefficients were obtained for subscales of self-regulation 0.77, social ability 0.83, empathy 0.76, and responsibility 0.89 (32).

Results

The index of the subjects according to the demographic characteristics were like this: The distribution of subjects according to birth arrangement showed that five individuals (3 in the control group and 2 in the experimental group) were the first child; 16 subjects (8 in the control group and 8 in the experimental group) were the second child; 6 subjects (3 in the control group and 3 in the experimental group) were the third child, and 3 (1 in the control group and 2 in the experimental group) were the fourth child. Also, the gender distribution of the participants showed that 16 (53.3%) of the subjects were female; And 14 (46.7%) of the subjects were boys. In the quantitative part, first, the mean and standard deviation of the research variables were calculated. The results are presented in Table 2.

Table 2. The mean and standard deviation of the variables in pre-test and post-test

Variable	Group	Pre-test Mean ± SD	Post-test Mean ± SD
Resiliency	Experimental	114.13± 9.69	130.40± 7.02
	Control	121.40± 11.25	108.86± 10.64
Self-regulatory	Experimental	39.33± 6.86	46.60± 6.42
	Control	42.93± 12.99	38..80± 8.33
Social ability	Experimental	37.86± 5.29	42.00± 5.64
	Control	36.26± 11.62	36.26± 5.89
empathy	Experimental	10.66± 1.75	11.26± 1.38
	Control	9.86± 3.27	10.53± 1.64
Responsibility	Experimental	24.93± 3.15	29.20± 2.24
	Control	26.46± 7.86	22.40± 2.94

According to Table 2, the mean of research variables in the experimental group has increased in the post-test stage. The tests univariate analysis of covariance and multivariate analysis of covariance were used to determine the significance of the obtained changes. In the following, defaults of multivariate analysis of covariance were performed.

First, the Kolmogorov-Smirnov test was used to investigate the normality of research variables. The Kolmogorov-Smirnov test showed that the values obtained were higher than 0.05, and the distribution of scores was normal ($P< 0.05$). Next, the box test was used in both experimental and control groups for homogeneity of covariance in research variables. Level of significance and value of F (F= 0.52 and $P< 0.05$) indicated that the covariances were the same in the two groups. Finally, the Levin test investigated equal variances in the groups' defaults. The results of the Levene test indicate that the assumption of homogeneity of variances of error of research variables in the pre-test the post-test stage was observed ($P< 0.05$); Therefore, the use from analysis of covariance was unimpeded. Then, analysis of covariance test was used to investigate the differences between the experimental and control groups.

Table 3. The results of analysis of covariance (ANCOVA) related to experimental and control groups in the variable of resiliency

Source	Sum of squares	Degree of freedom	Mean of squares	F value	P value	Effect size
Pre-test	195.42	1	195.42	3.53	0.023	-
Group	3627.93	1	3627.93	47.00	0.001	0.63
Error	2083.91	27	77.18			
Total	435121.000	30				

As shown in Table 3, the results of the analysis of covariance showed a significant difference between the experimental and control groups in resiliency (F= 47.00, $P< 0.01$).

Due to the values mean of resiliency for the experimental group in the pre-test (114.13) and post-test (130.40), training increased the mean scores of resiliency in the post-test. The effective rate of education on resiliency was 0.63. Therefore, it can be said that Lego education has had a positive and significant effect on increasing the resiliency of gifted children. Then, quadruple tests of multivariate analysis of covariance were performed for resiliency subscales. The test results are shown in Table 4.

Table 4. The results of analysis of covariance (MANCOVA) in post-test scores of subscales of resiliency

Source	Effect	Value	F	Hypothesis df	Error df	P
Group	Pillai's trace	0.83	27.25	4	21	0.001
	Wilks' lambda	0.16	27.25	4	21	0.001
	Hoteling's trace	5.19	27.25	4	21	0.001
	Roy's largest root	5.19	27.25	4	21	0.001

The quadruple tests of multivariate analysis of covariance showed that the experimental and control groups had a significant difference in one of the resiliency subscales ($P< 0.01$). Therefore, the multivariate analysis of covariance test was performed. The results are shown in Table 5.

Table 5. The results of analysis of covariance (MANCOVA) in subscales of resiliency

Source	Sum of squares	Degree of freedom	Mean of squares	F value	P	Effect size
Self-regulatory	414.45	1	414.45	6.64	0.017	0.21
Social ability	99.24	1	99.24	14.40	0.001	0.37
Responsibility	371.06	1	371.06	75.77	0.001	0.75
empathy	6.33	1	6.33	6.83	0.015	0.22

Based on the results in Table 5, analysis of covariance showed a significant difference between the experimental and control groups in self-regulation (F= 6.64), social ability (F= 14.40), responsibility (F= 75.77) and empathy (F= 6.83) ($P< 0.01$). Due to the values mean of self-regulatory for the experimental group in the pre-test (39.33) and post-test (46.60); social ability in the pre-test (37.86) and post-test (42.00); responsibility in the pre-test (24.93) and post-test (29.20) and empathy in the pre-test (10.66) and post-test (11.26). It can be seen that training has been increased the mean self-regulatory, social ability, responsibility, and empathy scores of the subjects in the post-test. For example, the effective rate of education on self-regulatory was 0.21; social ability 0.37; responsibility 0.75; and empathy 0.22. This means that lego training was effective on resilience subscales.

Discussion

This study aimed to determine the effectiveness of Lego bricks training on the resiliency of gifted children. The results of analysis of covariance showed that lego bricks training had a significant effect on resiliency and subscales (self-regulation, social ability, responsibility, and empathy) of gifted children. The result obtained corresponds with several studies (19,20,22,24-26).

In a study conducted by Kato and et al. on 39 high school students, although different tools were used, their findings supported from the present study, and the results indicated that Lego therapy has a significant effect on increased social skills and trust in others and is appropriate for practicing communication, social support, social problem solving and social conflict solving skills (19). Another study conducted by Boyne on six children 6-10 years with social communication problems is also consistent with the findings of the present study and confirms that lego therapy is a form of participatory play therapy aimed at increasing self-confidence and social independence (20). In addition, Legoff et al. believe that lego therapy is appropriate for increasing social skills, social competence, trust in self and others, and children's self-leadership, and is consistent with the results of the present study (22). Also, Akbari et al. showed that the educational lego bricks after 16 sessions had a positive effect on social skills,

cooperation, and self-control of 3 children (2 girls and one boy) 5 years with Gersham and Elliott social skills test, and it is a confirmation on the results this research (25). Findings of Barzegar Bafrooei et al. that 30 children 4-6 years evaluated using the Social Skills Rating Scale emphasized the importance of playing with lego bricks on children' social skills and reported consistent results with the present study (26). The findings of Tazkereh Tavassoly indicate the effectiveness of lego therapy in improving social skills and reducing social interactions problems in children 10-6 years after 16 treatment sessions and consistent with the present results study (24).

We can say that lego therapy gets help from children's interest in motivating behavioral changes (19). The lego system encourages children to express their internal ideas and implement them on their constructs (9). Lego therapy as an intervention approach is used to increase self and others, self-leadership, verbal and non-verbal communications, sharing, participation, shared, justly work division, and turn observance (22). Intelligence, sociality, problem-solving skills, self-awareness, and source of internal control are considered factors effective in increasing resiliency (14). Individuals with resiliency have the ability flexible thinking skills, conflict resolving skills, the ability to behave to respect themselves, the ability to be involved and communicate meaningfully with individuals, and having a healthy support network (17). In fragile events and crises, they have more felting purposeful in life and increase their compassion and kindness relative to the challenge of others (18).

As explained, Lego bricks training motivated children and made the environment more attractive. Children tried to be more creative and flexible while playing. They tried their best effort to build the requested position using lego. They were enabled to influence the results of their works and, with more probability, accepted responsibility for their actions. These children behaved more actively and optimistically the faced with problems. They attributed their success to their efforts and abilities, and when a failure or wrong happened, their failure attributed to not enough effort and tried to build the requested position again using Lego. They were more encouraged to interact with other children and showed more appropriate social skills.

The limitations included not using the follow-up test, limiting the statistical population to the Tehran Educational Lego Center, and using non-random sampling. Therefore, we recommend that researchers increase the validity of results and increase the power of generalizing to society in future research by using random sampling and use from follow-up tests.

Conclusion

A general conclusion should be said that Lego bricks training promotes resilience in gifted children. Therefore, parents, counselors, and therapists can use this intervention as a stable treatment method to improve the resiliency of gifted children.

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