



## Effectiveness of Virtual Filial Therapy for Mothers on the Social Skills and Aggression in Children with Learning Disabilities: A Randomized Clinical Trial

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### Original Article

#### Abstract

**Introduction:** The purpose of the present study was to investigate the effect of virtual filial therapy for mothers on the social skills and aggression in children with learning disabilities.

**Materials and Methods:** The target population in this randomized controlled clinical trial was all the 6-11 years old children with learning disabilities in Esfahan city during 2018-2019. 30 children with learning disabilities were selected based on Wolcott learning disabilities screening test through convenient sampling and randomly divided into two groups of 15 subjects. In the pre-test and post-test stages, mothers completed the Novaco Anger Scale and Matson's Social Skills Questionnaire. Then, educational materials, including text, photos, and videos were provided weekly via social networks for the mothers in experimental group. The data were analyzed using univariate and multivariate analysis of covariance.

**Results:** Virtual filial therapy significantly improved negative social skills ( $P = 0.001$ ) and its dimensions including non-social behavior ( $P = 0.046$ ), aggression and impulsive behavior ( $P = 0.003$ ), over self-confidence ( $P = 0.013$ ) and aggression variable ( $P = 0.031$ ) and aggressive thinking dimension ( $P = 0.008$ ), although its effects were not significant on positive social skills ( $P = 0.734$ ) and its dimensions including appropriate social behavior ( $P = 0.515$ ), communication with peers ( $P = 0.515$ ), decreasing aggressive behavior ( $P = 0.059$ ) and aggressive feeling ( $P = 0.109$ ).

**Conclusion:** It seems that virtual filial therapy of mothers can be used to improve negative behaviors of children with learning disabilities.

**Keywords:** Virtual filial therapy; Aggression; Social skills; Learning disabilities

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#### Introduction

In recent years, many psychological studies have been focused on children with learning disabilities. The term learning disability was first coined by Kirk. He used the term for children who had little progress in the development of learning of reading, writing, and math calculations, and introduced learning disabilities into special education programs. In defining learning disability, he has emphasized neurological dimensions, psychological processes, interpersonal differences, and outputs (1). According to the Diagnostic and Statistical Manual Disorders-5<sup>th</sup> Edition, learning disorders are included in four diagnostic categories including "reading disorder,

written speech disorder, mathematical disorder, and indeterminate learning disorder" (2).

Investigations show that children with learning disabilities are more likely than other children to have behavioral problems, including aggression (3-7). In addition, currently 75% of students with learning disabilities have a lack of social skills compared to their normal counterparts. Social skills are a group of reactions that are more interactive, maximize social reinforcement, and develop based on the characteristics and environment in which the person is located, and grow through education (8). In other words, social skills are acceptable behaviors that enable the individual to interact effectively with others and avoid socially

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unacceptable responses. Participating, helping, taking the lead in initiating communication, and praising are some of the social skills (9).

Psychologists have designed a variety of methods to prevent socio-emotional problems in children, some of which focus on the child himself, some on the parents, and some on the educational environment and family. The family is the context with which human life begins and forms. Therefore, one of the factors affecting the health and psychological well-being of the individual is the quality of family system functioning. One of the best interventions in the field of children's socio-emotional problems is to teach parents skills that lead to child control of behavior and the creation of effective parenting styles (10). Educating parents will enhance their self-confidence about their parenting role and also help them to control and reduce their child's inappropriate behaviors and feel more successful in raising them (11). The results of various studies have indicated that teaching parent-child relationship to mothers influences their children's negative emotions (12) and aggression (13,14), in addition to improving the parent-child relationship (15).

One of the treatments based on the parent-child relationship is filial therapy or play therapy based on this relationship. Play therapy directly or indirectly encourages spontaneity self-motivation (16). An important feature of games is that in which, the evaluation or judgment by the adults is not the issue anymore, and the child does not have to worry about making a mistake (17). Filial therapy, because of its focus on the child, can be a good way to communicate with the child. The purpose of this model is to educate the child's parents or caregivers. This model leads to a strengthened child-parent relationship (18) and the child experiences a sense of empowerment, importance, and acceptance, beside feeling better about himself (16). Since the parent-child relationship is the first line of treatment in many children's disorders, it is necessary to address behavioral therapies based on improving the parent-child relationship in learning disabilities. Studies have suggested that filial therapy has a significant effect on children's aggression (19,20) and their social and communication skills (21,22).

On the other hand, in the current era, due to the spread of information technology (IT), cyberspace has become an integral part of human life. These conditions require traditional tools to gradually give way to tools that are able to coordinate and harmonize with cyberspace. Recently, with the advances made in the web environment, the development of online questionnaires has been considered by researchers, which have far more capabilities in comparison to

printed samples and are used regardless of time and place, and clients in every area of the world can have access to it at the same time.

Virtual therapy is in fact a type of Internet-based therapy intervention in which a counselor or psychologist communicates with clients through the Internet and gives his/her recommendations. Despite the limitations accompanying online treatment, it has found an important place among individuals worldwide and its users are increasing every day. Although little research has been conducted on the effectiveness of Internet therapy, this type of treatment has been widely welcomed (23). Internet therapy is one of the self-help treatment methods that has been widely developed in recent years. This is because the Internet has provided the ground for people to be able to communicate with each other wherever they are (24). Internet therapy is performed in three ways: online communication, offline communication, and without communication with the therapist. Following the development of this treatment, some researchers have carried out comparisons on the effectiveness of offline Internet therapy with traditional face-to-face therapies and have shown that the use of virtual therapies can also improve mood problems (25).

Considering the effect of learning disabilities on social skills and aggression in children, research to measure the effect of therapeutic interventions on this sample seems necessary and can contribute to their subsequent success. Moreover, due to the expansion of Internet use in the current Iranian society, in order to reduce the time and cost of attending face-to-face classes, it is necessary to evaluate the effectiveness of virtual therapies. Therefore, the present study is conducted aiming to investigate the effect of virtual filial therapy on the improvement of aggression and social skills in children aged 6 to 11 years in learning disability centers in Isfahan, Iran.

### Materials and Methods

This study was a randomized controlled clinical trial with the statistical population consisting of all children with learning disabilities aged 6 to 11 years in Isfahan in 2018-2019. Sampling was performed by selecting 30 children from three primary schools after obtaining permission from the education department as well as from two clinics using the convenience method. Then the children were randomly divided into experimental and control groups by lot. Both groups answered the study questionnaires in the pre-test and post-test stages. The mothers of the participants in the experimental group were trained through Telegram software in 10

sessions for 10 consecutive weeks with text files, photos, and videos. During this period, the control group did not receive any treatment. The study inclusion criteria included children with a learning disability based on the screening test and the psychologist's diagnosis, the absence of mental or physical disorders in mothers affecting mood and emotions, the absence of concomitant diseases in the children, and mothers' cooperation, and mothers' consent for their children to participate in the study. Besides, absence of learning disabilities, lack of regular participation in the study sessions, and failure to complete homework and study questionnaires were considered as the exclusion criteria.

#### Data collection tool

*Learning difficulties questionnaire proposed by Willcutt et al. [Colorado Learning Difficulties Questionnaire (CLDQ)]:* This questionnaire was used to diagnose children with learning disabilities. The CLDQ scale consists of 20 items that are completed by students' parents. The tool considers learning disabilities to consist of five basic factors: "reading, calculation, social cognition, social anxiety, and spatial functioning." The answer to each item is as a five-point Likert scale from not at all to always with scores ranging from 1 to 5, respectively (26). The validity of the questionnaire was examined by the developers using the internal consistency (IC) and test-retest methods, which showed acceptable values (26).

*Anger in Children Questionnaire (adopted from the Novaco Anger Scale):* This questionnaire was designed by Mohammad Karimi and adapted from the Novaco Anger Scale in 15 items to measure anger, aggression, and resentment. In order to score for each item, the four options (never, rarely, sometimes, always) are considered with values from 0 to 3, respectively. Subjects who score above and below average on this scale are of high and low aggression,

respectively. This questionnaire examines three dimensions of aggressive behavior, aggressive thoughts, and aggressive feelings. The Cronbach's alpha coefficient of the children's anger questionnaire was obtained as 0.72 and its face validity was confirmed by professors in the field (27).

*Matson Social Skills Checklist:* This questionnaire is used to assess the social skills of children aged 4 to 18 by parents and educators and consists of 55 items for parents and 5 items for teachers based on a Likert scale (never = 1, always = 5). The checklist includes the dimensions of "appropriate social behavior, antisocial behavior, aggression and impulsive behavior, excessive self-confidence, and communication with peers" whose validity and reliability have been confirmed (28).

#### Intervention

Educational materials including text, photos, and videos were provided to the mothers of the experimental group on social media for 10 weeks (one session per week) on a weekly basis. Mothers in the control group did not receive any specific information during this period. The educational content of the mothers in the experimental group is presented in table 1.

Descriptive and inferential statistics were used to analyze the obtained data. The data normal distribution for each variable was examined using the Shapiro-Wilk test and the intragroup comparison was performed using paired t-test. The study hypotheses were tested using univariate analysis of covariance (ANCOVA) and multivariate analysis of covariance (MANCOVA) methods. The reliability of the questionnaires was determined using the Cronbach's alpha coefficient. Finally, the data were analyzed in SPSS software (version 23, IBM Corporation, Armonk, NY, USA).  $P < 0.05$  was considered as the significant level.

**Table 1.** Summary of the 10-session face-to-face and virtual treatment protocol proposed by Landreth and Bratton (18)

Session	Description of session
First	Displaying text file and educational video to parents on how to encourage, strengthen, and empathize; the main concepts of the game and a list of toys and how the parents could play with their child
Second	Displaying text and video files to familiarize parents with the four main senses and empathetic education with the child
Third	Displaying text and video files on how to train the use of the four principles of the game
Fourth	Displaying text and video files to teach how to use real-life toys
Fifth	Displaying text and video files on how to deal with child misconduct and the three steps of restraint
Sixth	Displaying text and video files on how to talk to the child, a list of the game session skills
Seventh	Displaying text and video files to teach how to make the right choice and empower the child in the game
Eighth	Displaying text and video files to teach self-confidence and the consequences of its reduction in the child
Ninth	Displaying text and video files to teach how to persuade and its difference with admiration
Tenth	Running the post-test and including the training package as a reward

## Results

No intention-to-treat (ITT) analysis was performed due to the lack of drop in participants in the two groups. The mean age of mothers in the virtual filial therapy and control groups was respectively 36.27 and 40.07 years, but there was no significant difference between the two groups. The average education level in the virtual filial therapy and control groups was 13.87 and 14.27 years, respectively. The mean values of the study variables for the two groups and the reliability of the tools obtained using Cronbach's alpha coefficient are presented in table 2.

Based on the data reported in table 2, the mean scores of most of the studied variables in the post-test stage in the intervention groups were significantly better than those of the control group ( $P < 0.05$ ).

Using ANCOVA test requires assumptions, the most important of which are normal distribution of scores, homogeneity of variances based on the Levene's test of sphericity, homogeneity of the

variance-covariance matrix using Box's M test, and homogeneity of the regression slope by pre-test interaction and independent variable.

The results of Shapiro-Wilk test to check the normality of the data indicated that the scores of the study variables in both groups in the pre-test and post-test stages followed the normal distribution ( $P > 0.05$ ). The results of the Levene's test also confirmed the homogeneity of variances in the pre-test and post-test stages in the study variables ( $P > 0.05$ ). The regression line slope hypothesis confirmed the interaction of the group and the pretest in the posttest stage in all the studied variables ( $P > 0.05$ ). The results of the Box's M test to investigate the similarity of the variance-covariance matrices of scores in the stage of positive social skill dimensions (Box's  $M = 6.22$ ,  $F = 1.91$ ,  $P \leq 0.125$ ), negative social skill dimensions (Box's  $M = 8.95$ ,  $F = 1.31$ ,  $P \leq 0.246$ ), and aggression dimensions (Box's  $M = 11.5$ ,  $F = 1.69$ ,  $P \leq 0.118$ ) were confirmed as well.

**Table 2.** Scores of social skills and aggression by the two groups and reliability of instruments using Cronbach's alpha coefficient

Variable	Reliability	Group	Pre-test	Post-test	P value (intragroup)
Positive social skills	0.787	Experimental	87.00 ± 18.21	90.67 ± 14.72	0.377
		Control	99.93 ± 12.01	98.47 ± 10.38	0.285
		P value (intergroup)	0.020	0.077	
Negative social skills	0.943	Experimental	68.40 ± 25.51	58.40 ± 16.31	0.036
		Control	70.87 ± 20.36	74.33 ± 21.45	0.022
		P value (intergroup)	0.772	0.030	
Appropriate social behavior	0.927	Experimental	63.40 ± 15.24	66.53 ± 12.23	0.384
		Control	73.87 ± 8.55	73.80 ± 6.69	0.951
		P value (intergroup)	0.028	0.053	
Antisocial behavior	0.873	Experimental	25.40 ± 9.61	23.20 ± 6.87	0.036
		Control	25.13 ± 7.95	26.87 ± 9.18	0.188
		P value (intergroup)	0.935	0.032	
Aggression and impulsive behavior	0.91	Experimental	26.13 ± 10.85	21.53 ± 7.68	0.036
		Control	26.47 ± 8.52	28.20 ± 8.69	0.209
		P value (intergroup)	0.926	0.034	
Excessive self-confidence	0.883	Experimental	16.87 ± 7.51	13.67 ± 5.39	0.041
		Control	19.27 ± 6.05	19.27 ± 6.38	0.955
		P value (intergroup)	0.343	0.015	
Communication with peers	0.811	Experimental	23.60 ± 4.52	24.13 ± 4.17	0.558
		Control	26.07 ± 2.55	24.67 ± 3.22	0.129
		P value (intergroup)	0.076	0.698	
Aggression	0.941	Experimental	18.67 ± 11.92	15.67 ± 9.49	0.043
		Control	24.33 ± 11.73	25.43 ± 10.25	0.770
		P value (intergroup)	0.200	0.011	
Aggressive behavior	0.915	Experimental	8.67 ± 6.10	8.13 ± 5.04	0.759
		Control	12.73 ± 6.25	13.20 ± 5.76	0.799
		P value (intergroup)	0.082	0.016	
Aggressive thoughts	0.789	Experimental	4.33 ± 3.22	3.60 ± 2.38	0.166
		Control	6.67 ± 3.06	7.33 ± 2.55	0.501
		P value (intergroup)	0.052	0.001	
Aggressive feelings	0.855	Experimental	5.67 ± 3.97	3.93 ± 2.55	0.046
		Control	4.93 ± 3.41	4.90 ± 3.01	0.036
		P value (intergroup)	0.592	0.351	

Considering the normal distribution of the data, equality of variances, and homogeneity of regression slopes in all variables, ANCOVA could be used to test the hypotheses. The ANCOVA results to compare the post-test scores of the experimental and control groups are displayed in table 3. In this analysis, in order to control the effect of pre-test performance on the score results, the post-test of the pre-test scores were controlled and then the groups were compared according to the remaining scores.

As can be seen in table 3, there was a significant relationship between the pre-test scores of the positive and negative social skills and aggression with their post-test scores ( $P < 0.050$ ). By controlling this relationship, the difference between the adjusted mean scores of the positive social skills in the post-test stage (after controlling the pre-test scores) in the intervention groups was not significant ( $P \leq 0.657$ ). However, the results suggested that the difference between the adjusted mean scores of the negative social skills and aggression in the post-test stage (after controlling the pre-test scores) was significant in the intervention groups ( $P \leq 0.001$ ) and 34.2% of the individual differences in the negative social skills and 16.2% of the individual differences in aggression were associated with the difference between the two groups or the effect of virtual filial therapy interventions. A statistical power of 95.8% in negative social skills and 72.8% in aggression indicated that the statistical accuracy of this test was acceptable. Furthermore, the sample size was sufficient to test this hypothesis.

The results of the MANCOVA test to investigate the effect of mothers' virtual filial therapy on the components of positive and negative social skills and aggression in children with learning disabilities are shown in table 4.

Given the data in this table, by controlling the relationship and the effect of pre-test scores, a significant difference was observed between the mean scores of the positive social skills dimensions in the post-test stage in

the two groups ( $P \leq 0.714$ ). As a result, the mothers' virtual filial therapy had no significant effect on improving the dimensions of positive social skills in children with learning disabilities. However, the results of table 4 revealed that the difference between the adjusted mean scores of the negative social skills in the post-test (after controlling the pre-test scores) was significant in the groups ( $P \leq 0.007$ ) and 40.6% of individual differences in the negative social skills dimensions were related to the differences between the two groups or the effect of virtual filial therapy interventions. The statistical power of 87.2% indicated the high statistical accuracy of this test and the sufficient sample size to test this hypothesis. Based on the findings reported in table 3, the difference between the adjusted mean scores of the aggression dimensions in the post-test stage (after controlling the pre-test scores) in the groups was significant ( $P \leq 0.016$ ) and 35.5% of the individual differences in the aggression dimensions were related to the difference between the two groups or the effect of virtual filial therapy interventions. The statistical power of 80.1% showed the high statistical accuracy of this test and the appropriate sample size to test this hypothesis.

The results of comparing the experimental and control groups in the post-test stage using ANCOVA test or examining the differences between the two groups in the post-test stage in the dimensions of negative social skills and aggression are presented in table 5.

Given the data in table 5, the difference between the mean scores of negative social skills dimensions including antisocial behavior, aggression, and excessive self-confidence in the two groups was significant ( $P \leq 0.046$  and  $P \leq 0.003$ , respectively). In other words, the virtual filial therapy intervention group had a significant difference with the control group in all three dimensions of the negative social skills. The effect of group membership or the effect of interventions in reducing antisocial behavior, aggression, and self-confidence were 15, 30, and 22.4%, respectively.

**Table 3.** Comparison of mean scores of the study variables by groups using analysis of covariance (ANCOVA)

Variable	Source of changes	Sum of squares	Degree of freedom	Sum of squares	Statistic F	P value	Effect size	Statistical power
Positive social skills	Pre-test	1466.320	1	1466.320	16.970	0.001	0.386	0.978
	Group membership	10.160	1	10.160	0.118	0.734	0.004	0.063
	Error	2332.750	27	86.390				
Negative social skills	Pre-test	7269.005	1	7269.005	67.590	0.001	0.714	1.000
	Group membership	1510.197	1	1510.197	14.030	0.001	0.342	0.958
	Error	2905.929	27	107.620				
Aggression	Pre-test	365.501	1	365.501	4.160	0.048	0.134	0.655
	Group membership	456.165	1	456.165	5.200	0.031	0.162	0.728
	Error	2368.266	27	87.710				



**Table 4.** Effect of mothers' virtual filial therapy on the components of positive and negative social skills and aggression in children using tests

Variable	Source	Coefficient	Statistic F	Assumption degree of freedom	Error degree of freedom	P value	Effect size	Statistical power
Positive social skills	Appropriate social behavior pre-test	0.592	8.61	2	25	0.001	0.408	0.947
	Communication with peers pre-test	0.489	13.08	2	25	0.001	0.511	0.994
	Group	0.948	0.68	2	25	0.515	0.052	0.152
Negative social skills	Antisocial behavior pre-test	0.675	3.69	3	23	0.026	0.325	0.729
	Aggression and impulsive behavior pre-test	0.835	1.52	3	23	0.236	0.165	0.347
	Excessive self-confidence pre-test	0.497	7.75	3	23	0.001	0.503	0.972
Aggression	Group	0.597	5.17	3	23	0.007	0.406	0.872
	Aggressive behavior pre-test	0.684	3.54	3	23	0.030	0.316	0.710
	Aggressive thoughts pre-test	0.658	3.97	3	23	0.020	0.342	0.764
	Aggressive feeling pre-test	0.738	2.72	3	23	0.060	0.262	0.583
	Group	0.645	4.21	3	23	0.016	0.355	0.801

Nevertheless, the results indicated that there was a significant difference between the mean scores of the dimension of aggressive thoughts in the two groups ( $P \leq 0.008$ ) and the difference between the dimensions of aggressive behavior and feelings in the two groups was not significant ( $P > 0.050$ ). In other words, it can be said that the virtual filial therapy group was significantly different from the control group only in the dimension of aggressive thoughts. The effect of group membership or virtual filial therapy in reducing aggressive thoughts was 0.248 or 24.8%.

### Discussion

The aim of this study was to evaluate the effectiveness of virtual filial therapy in improving social skills, aggression, and its dimensions in children with learning disabilities. The findings revealed that virtual filial therapy could reduce negative social skills and their dimensions, aggression, and aggressive thoughts, but its effect on improving positive social skills and its dimensions

and dimensions of aggressive behavior and feelings was not significant. These results were consistent with the findings of the studies by Soltani and Farhadi (19) and Landreth and Lobaugh (20). In these studies, it was concluded that filial therapy had a significant effect on aggression in children (19,20).

According to studies, children with learning disabilities perform poorly in relation to peers and appropriate social behaviors in positive social skills and show aggression when dealing with interpersonal problems due to the lack of appropriate social skills. Play therapy is a type of psychological and social vaccine injection for children that helps improve their social skills. Children with learning disabilities have difficulty in some aspects of growth and development, especially in the areas of social skills, and experience more challenges compared to normal children. Obviously, the sooner and faster the social problems of children with learning disabilities can be reduced, the more it is possible to improve their social skills and prevent their behavioral and emotional disorders (29).

**Table 5.** Comparison of the two groups in the dimensions of negative social skills and aggression in the post-test using analysis of covariance (ANCOVA) test

Variable	Source	Sum of squares	Degree of freedom	Sum of squares	Statistic F	P value	Effect size	Statistical power
Negative social skills	Antisocial behavior	93.62	1	93.62	4.42	0.046	0.150	0.626
	Aggression and impulsive behavior	311.84	1	311.84	10.71	0.003	0.300	0.882
	Excessive self-confidence	113.77	1	113.77	7.21	0.013	0.224	0.733
Aggression	Aggressive behavior	97.53	1	97.53	3.91	0.059	0.135	0.477
	Aggressive thoughts	39.61	1	39.61	8.25	0.008	0.248	0.788
	Aggressive feeling	16.67	1	16.67	2.75	0.109	0.099	0.358

Filial therapy seeks to provide ways of socializing for children with learning disabilities; because most of the problems of these children that lead to their disability are related to their performance and behaviors in their personal and social lives (30). Thus, learning social skills through filial therapy leads to emotion regulation, stress management, communication, and self-control in the child. One of the main reasons for repeated aggressive behaviors in children is the lack of social skills. Because they are not aware of the effective way of conversation due to the limited vocabulary domain and choose the wrong way of aggression to express themselves (31). Their inability to do simple things, such as asking for negotiation and complaining, often upsets friends, acquaintances, and strangers (19). Severe social deficits lead to recurrent failures and, as a result, lead to aggression. Teaching social skills to these children often leads to profound changes in aggressive behaviors, increasing interpersonal relationships, better ability, tolerating rejection and the resulting stress, and reducing violent behavior in these children (19,21,30). These promising results suggest that teaching social skills through filial therapy intervention can be a promising way to reduce the negative dimensions of social skills.

Virtual filial therapy seeks to enable remote education so that parents (mothers) who do not want to be known in society and who are concerned about their children being labeled as a child with a learning disability can enhance their knowledge about learning disabilities for a better communication with their child. In fact, the purpose of educating parents is to teach them new skills in cyberspace; Because parents are the only adults who have a stable presence in the child's life and if they receive the necessary education, they can deal more effectively with their children's difficult behaviors and, as a result, enable their child to continue and maintain therapeutic progress (21).

The skills learned in filial therapy are not problem-based or modification-based (22) and can be generalized to out-of-game situations (19). In fact, parents learn to respond in a similar way to the child at all times outside of play. This transfer of new parental behavior indicates that these new behaviors are naturally integrated with the parent's response, and that these reflexive responses help the children to understand that they are understood by their parents and their feelings, wants, and needs are supported. As a result, their feelings of anger and tension subside.

### Limitations

Each study is accompanied by some limitations and the interpretation of the results should be considered

taking into account these limitations. Since the statistical population of the present study consisted of children with learning disabilities in Isfahan, care should be taken in generalizing the results to other groups. Additionally, the lack of sufficient studies in Iran on filial therapy, especially virtual therapies, was another important limitation that limited the possibility of comparing the results and analyzing the study findings.

### Recommendations

Counselors and psychologists in counseling centers and schools are advised to include virtual filial therapy training (play therapy based on parent-child relationship) on the agenda of these centers to improve student learning problems. It is also suggested that in future studies, the treatment method used in the present study be combined with other treatment methods and compared with other types of play therapy in a virtual and face-to-face manner in the treatment of specific disorders and symptoms.

### Conclusion

It seems that virtual filial therapy of the mothers can be adopted to improve the negative behaviors of children with learning disabilities.

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### Authors' Contribution

Sedigheh Jafar Rangchi and Hadi Farhadi contributed to the designing, implementing, analyzing the results and writing the study and read and approved the final version.

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### Conflict of Interest

The authors declare no conflict of interest.

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