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Comparison of the Effectiveness of Cerebral Exercise and Play Therapy on Empathy and Parent Relations in Students of Learning Disorders in Tehran

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ABSTRACT

Background and Aim: Learning disorder in children is a neuro-developmental disorder that affects the effective processing of verbal or non-verbal information. The present study was conducted with the aim of comparing the effectiveness of brain exercise exercises and filial play therapy on empathy and parent-child relationships in students with learning disabilities in Tehran. **Methods:** It was quasi-experimental research with a pre-test, post-test design with a control group. The research community includes all students with specific learning disabilities in the elementary school of Tehran. Regular multi-stage random sampling method was selected and randomly divided into three groups (two experimental groups and one control group). In all three groups, children's cognitive and emotional empathy scale questionnaires: parent rating form (Dodds et al., 2008) and Pianta overall positive parent-child interaction questionnaire, brain exercise therapeutic exercises (8 sessions) and the second experimental group, Filial play therapy (10 sessions) and no intervention was done for the control group. Statistical analysis was performed using multivariate, univariate analysis of covariance and Bonferroni's post hoc test and SPSS23 software. **Results:** The findings of the research have shown that brain exercise exercises and filial play therapy on emotion management skills (F=4.880 and P<0.01), social competence (F=200.64 and P<0.01), empathy (F=231.23 and P<0.01) and parent-child relationships (F=29.97 and P<0.01) were effective. Also, there is no significant difference between the group of brain exercise exercises and the filial play therapy group on the improvement of empathy and parent-child relationships. **Conclusion:** It can be concluded that these two types of educational techniques can be used to help and educate children with learning disabilities.

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Introduction

Learning disorder in children is a neuro-developmental disorder that affects the brain's ability to perceive or effectively process verbal or non-verbal information due to the interaction of effective hereditary and environmental factors. Learning disability covers a much wider range than academic problems (Mrazik, N aidu, Borza, Kobitowich, and Shergill, 2019) and affects almost every aspect of a child's life, including education, self-esteem, and self-efficacy, and is a constant challenge. Al-Omarast (Chambrier & Zesiger, 2018; Tolin, 2019); This disorder is characterized by persistent problems in the field of learning academic skills related to reading, written expression, and mathematics, which begins in early childhood and is not compatible with the child's general intelligence ability. (Sadock, Sadock, and Ruiz, 2015). Low grades and poor learning usually characterize the onset of learning disorders early in school entry. Knowing the type of learning disorder and finding its roots, especially in the primary school period, and the main lessons can help solve this disorder effectively (Fijueroa, 2016). The prevalence rate of this disorder in school children is reported to be 3 to 17.5 percent, and boys are more than girls, and the ratio varies from 2 to 1 to 4 to 1 (Psychiatric Association, 2013). The age range of primary school children has received the most emphasis in the field of learning disorders (Kirimi, 2019).

The empathy component is another factor related to the condition of learning-disabled children. Empathy is described as a cognitive and emotional construct (Yang, Zhu, Ixa, Li, and Zhang, 2020; Szuster & Jarymowicz, 2020), as the capacity of people to perceive and understand the behavior of others, experience their emotions and feelings and express what they understand. Its cognitive dimension refers to the ability to understand the other party's point of view (Tarantino, Gasperis, Masco, and Pino, 2019) and is a crucial ability that prevents harm to others and is the motivating force of social behaviors that promote group cohesion. (Morley, Lieberman, & Zaki, 2015). Reading and reading disabilities are very important areas that, in addition to social relationships, will be effective in emotional and emotional relationships, such as empathy (Taroyan, Nicolas, and Fawcett, 2007). Parents and families play an essential role in determining their children's physical, mental and social health. They can influence children through interaction with their children and their attitudes (Alizadeh, Hemati Alamdarlou, Rezaei Dehnavi, Shojaei, 2018). Improving the quality of parent-child interaction is associated with reducing child behavioral problems and increasing pro-social behaviors, improving parenting skills, including firm discipline, and reducing parental stress and tension (Damodaran, 2013). Moreover, the quality of parent-child interaction has been associated with the effect on children's behavioral disorders and executive functioning (Sheperis, Sheperis, Monceaux, Davis, & Lopez, 2015). Furthermore, changing parent-child interaction patterns to prevent problems, strengthen parents' parenting methods, and increase their self-confidence plays an important and fundamental role (Damodaran, 2013).

Considering the conditions of children with learning disabilities, it is important to improve their condition through psychological methods such as brain exercise and filial play therapy. Brain exercise is known as motor skill training and was formally reviewed by Dennison and Dennison in 1970. The brain exercise method activates the brain to balance stress around specific memories, situations, people, places, and skills. Brain exercise activity protocol increases academic and behavioral performance by activating both brain hemispheres through neural re-patterning to enhance whole-brain learning (Nagarkar, Rokade, and Malwade, 2018). Brain exercise includes a set of movements that cause the apparent activity of the brain, promote neural activity, and facilitate learning in the brain. This program is based on the idea that learning problems are caused by brain and body incompatibility and thus block the ability of a person to learn (Dennison & Dennison, 1994). Brain exercise intervention is implemented for children with developmental disabilities such as attention deficit hyperactivity disorder, attention deficit disorder, dyslexia, and an autism spectrum disorder. The areas in which this method has shown significant improvements are concentration, memory, reading scientific and educational resources, writing, mathematics, taking tests, physical coordination, relationships, personal responsibility, attitudes, and organizational skills (Nagarkar, Rokade, and Malwade, 2018). Moradi, Davoudi, Heydari, and

Al-Yasin (2018) showed that brain exercise training and child therapy based on the parent-child relationship is effective on attention-deficit/hyperactivity disorder, and most of the effect is related to brain exercise training. The effect has remained stable during follow-up (Moradi, Davoudi, Heydari, and Al-Yasin, 2018).

Children with learning disabilities cannot express their emotions and feelings due to their low level of abstract thinking. Suppression and lack of skill in expressing emotions, especially negative ones, endanger the child's mental health, cause anxiety and psychological tension, and reduce the positive emotions and adaptability of the individual (Narimani, Porzor, and Basharpour, 2015). Therefore, finding a way to enable the child to express his emotions in a way other than verbal expression seems necessary. The game is a tool that the child uses to express himself, and for every child regardless of race, language, and nationality, it is a suitable means to express emotions and self-expression .

Play is one of the most important components of a child's life. Children can learn and develop basic and social skills through play, especially play equipment, which plays a decisive role in play so that they can discover the world around them (Ahloy-Dallaire, Espinosa, and Mason, 2018). Researchers have proposed play therapy to reduce emotional and social problems (Lavasani, Keramati, and Kadivar, 2018). The most vivid way to change behavior in children is Play Therapy. One of these methods is play therapy based on parent-child relationships or filial play therapy (Oruji Aghdam, Atadakht, and Basharpour, 2020). Based on the above, the present study was conducted to compare the effectiveness of brain exercise exercises and filial play therapy on empathy and parent-child relationships in students with learning disabilities in Tehran.

Method

The research was quasi-experimental, with a pre-test and post-test design with a control group. The research community includes all students with special learning disabilities in the elementary school of Tehran after obtaining the necessary permits from the Department of Education and Education of Exceptional Children in Tehran. 45 teaching disabled children whose parents and themselves were willing to cooperate were randomly selected and randomly divided into three groups (two experimental groups and one control group). Among these groups, an experimental group was exposed to the independent variable of brain exercise exercises, a training group was exposed to the independent variable of filial play therapy, and no educational intervention was applied to the control group. The current research has the code of ethics from Ahvaz University of Medical Sciences with ID IR.IAU.AHVAZ.REC.1399.103.

Tools

1. Children's Cognitive and Emotional Empathy Scale (Parent Rating Form): This scale is an objective scale created by Dadds, Hunter, Hawes, Frost, Vassallo, Bunn, Merz, and Masry (2008) and consists of 23 questions that It is scored on a 9-point Likert scale from strongly disagree (-4) to strongly agree (+4). This scale is adapted based on Bryant's empathy index and is the only one that can evaluate the empathy of children aged 4 to 16. The validity and reliability of the mentioned scale have been confirmed in the research of Dodds et al. (2008). They used convergent validity and factor analysis methods to check the scale's validity. The convergent validity results indicated the favorable convergent validity of children's cognitive and emotional empathy scale: parent rating form with "Bryant Empathy Index". The scale's reliability was obtained by Cronbach's alpha coefficient method, with 0.88 for the whole scale and 0.87 and 0.89 for cognitive and emotional empathy subscales, respectively (Khanjani, Shariati, and Amin, 2012).

2. Child-Parent Relationship Scale (CPRS): This scale was created by Pianta for the first time in 2011. It includes 33 items and four components measuring parents' perception of their relationship with their child. Its scoring is based on a 5-point Likert scale (a score of 5 is definitely applicable and a score of 0 is definitely not applicable). This scale was translated by Tahmasebian and Khoramabadi (1998), and its content validity was evaluated by experts (Abareshi et al., 2009). This scale includes areas of conflict (17 items), intimacy (10 items), dependence (6 items), and overall positive relationship (sum of all areas) (Abedi Shapourabadi et al., 2011). In a study, Driscoll and Pianta (2011) reported Cronbach's alpha of this questionnaire in each of the components of conflict, closeness, dependence, and overall positive relationship as 0.75, 0.74, 0.69, and 0.80, respectively.

Results

The mean (standard deviation) age in the brain exercise group was 9.55 (1.14); in the filial play therapy group, it was 10.17 (1.66); and in the control group, it was 10.00 (1.29). The three groups did not significantly differ in age ($P<0.05$). The results showed the F ratio of univariate covariance analysis for emotion management skill variable ($F=4.880$ and $P<0.01$), social competence ($F=200.644$ and $P<0.01$), empathy ($F=231.232$ and $P<0.01$) and parent-child relationships ($F=29.978$ and $P<0.01$) were obtained. These findings show a significant difference in the dependent variables of emotion management skills, social competence, empathy, and parent-child relationships between brain exercise exercises and filial play therapy groups. Furthermore, the analysis results showed that the difference between the means of the brain exercise group and the control group of empathy is 45.143, which is significant at the 0.01 level. This finding shows that brain exercise exercises have been effective in improving empathy. Therefore, hypothesis 1-3 of the research is confirmed. Moreover, the difference between the mean of the filial play therapy group and the group that shows empathy equals 43.753, which is significant at the 0.01 level. This finding shows that filial play therapy has been effective in improving empathy. The results show that the difference between the means of the brain exercise group and the control group is 17.914, which is significant at the 0.01 level. These findings show that brain exercise exercises have been effective in improving parent-child relationships.

Conclusion

The present study was conducted to compare the effectiveness of brain exercise exercises and filial play therapy on empathy and parent-child relationships in students with learning disabilities in Tehran. The results of the present study showed a significant difference in the dependent variables of empathy and parent-child relationships between the groups of brain exercise and filial play therapy. This finding shows no significant difference between the group of brain exercise exercises and the filial play therapy group on improving empathy and parent-child relationships. Filial therapy strengthens the mother-child relationship (Karimi & DashtBozorgi, 2021) and improves family relationships (Landerth & Bratton, 2020). Therefore, mothers participating in filial therapy sessions have interacted more with their children through this treatment and its tasks. A change in the parent's behavior will also result in a change in the child's behavior, and many of the emotional and behavioral problems of children rooted in the aggressive interactions of parents will be improved (Vanfleet, 2011). The change in parents' attitudes towards their children and parenting style is another reason for these changes. The harsh atmosphere and texture of the family and harsh parenting cause an increase in maladaptive behavior in children. Therefore, by improving the family context and how the members interact with each other, and especially by improving the interaction of parents with the child, we will see a decrease in the child's maladaptive behaviors. Since some of the effective treatment processes, which are essential parts of play therapy, can be transferred to the filial therapy game, such as the projection of emotional discharge and the expression of feelings, these effects have a major impact on the improvement of the child's relationship with the parent. A child who cannot have these emotional outbursts in everyday situations can happen while playing with the parent. The presence of parents, their recognition, their acceptance of these feelings, their effort to understand the feelings, and the lack of one-sided judgment, cause the breakdown of inhibition and defective communication cycles between the parent and the child and the disappearance of inappropriate behaviors in the child. Thus, parents' lack of knowledge about correct parenting is the cause of many children's problems. This treatment method reduces the level of anxiety in parents by increasing their sense of effectiveness, and this reduction in anxiety makes parents act better against their children's maladaptive behaviors.

Brain exercise through simple physical movements and drinking water stimulates a certain part of the frontal brain of students with behavioral problems. It increases their ability to pay attention and process the information received from the senses as efficiently as possible. This exercise keeps the brain awake and alert and increases the attention span. Recent studies have shown that using physical movements to improve the learning of students with behavioral problems awakens different parts of the brain (Pundir et al., 2007). According to psychoanalytic theory, when a child can freely engage in physical activity, this activity can lead to the discharge of negative emotions (catharsis). On the other hand, because he reacts and acts freely in interaction with his peers, this acts as a

role model and emotional behavioral balancer for the child. In the peer group, the child grows and matures emotionally, cognitively, behaviorally, and socially, and since his attention during brain exercise to information and the surrounding environment is spontaneous and spontaneous, with more accurate brain processing, as well as concentration and learning more come along and in this way, the child gets the necessary balance of emotional and behavioral traits.

Therefore, the most important application of this research can be its effectiveness in reducing children's behavioral problems and increasing social skills liked by society. This method can be taught by therapists who work with children or psychologists and psychiatrists to parents who refer to treatment centers to increase social-emotional skills. Moreover, it is suggested to study these methods in other cities concerning children with learning disorders and the autism spectrum.

Conflict of Interest

According to the authors, this article has no financial sponsor or conflict of interest.

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