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ARTICLE



The effectiveness of painting therapy program for the treatment of externalizing behaviors in children with intellectual disability

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ABSTRACT

Externalizing behaviors are prevalent among children with intellectual disability (ID). This study was conducted to identify the effectiveness of painting therapy program in alleviating the externalizing behaviors of male children with ID. In a randomized clinical trial, 60 children with ID were separated into intervention group and control group. The intervention group received the painting therapy program (12 weeks; two sessions per week), while the control group did not receive any program. The questionnaires were completed by their parents in order to evaluate the externalizing behaviors of children at the beginning and at the end of the painting therapy program. A two-way repeated-measure Analysis of Variance showed that the mean levels of externalizing behaviors in the intervention group decreased after the painting therapy program. In addition, the analysis showed that the mean levels of externalizing behaviors between the intervention group and the control group were significantly different. The findings revealed that painting therapy program could alleviate the externalizing behaviors of children with ID.

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Introduction

Intellectual disability (ID) is defined by significant limitations in intellectual functioning as well as in adaptive behaviors (AAIDD, 2010; Oltmanns & Emery, 2012). It is interesting to note that the authors of Diagnostic and Statistical Manual of Mental Disorders-5 have emphasized the inclusion of adaptive behavior in the definition of ID as well (American Psychiatric Association, 2013). Numerous studies have reported that the prevalence of externalizing behaviors among children with ID is higher than children with normal intelligence (Mervis, Becerra, Rowe, Hersh, & Morris, 2005; Schuiringa, Van Nieuwenhuijzen, Orobio De Castro, & Matthyss, 2016). The presence of externalizing behaviors in children with ID would induce other disorders or problems as well, e.g. conduct disorders, antisocial behavior, jeopardizing community (Rojahn et al., 2012) and internalizing behavior problems (Hauser-Cram & Woodman, 2016; Rodas, Chavira, & Baker, 2017). By realizing the fact that externalizing behaviors are more prevalent among

children with ID (Allen, Lowe, Matthews, & Anness, 2012), providing treatment to them is undoubtedly necessary.

Painting as a method of psychotherapy may alleviate the externalizing behaviors by expressing those emotions and inner feelings which are difficult to be expressed verbally. Also, it enables children with ID to express artistically their emotions and hopefully to experience well-being as well as feelings of self-respect in order to maintain the healthy relationships with others (Lee & Liu, 2016; Sitzer & Stockwell, 2015). Painting therapy provides opportunities for children to freely express their emotions, needs and even knowledge through colors and lines as they wish (Bozcuk et al., 2017). Painting is more useful for treating aggressive and restless children rather than for diagnosing adults' psychological disorders. It also allows children to express their capabilities and creativities (Flood & Phillips, 2007).

According to the self-determination theory (Deci & Ryan, 2011), there are three types of psychological needs: (a) autonomy (the need to act freely in favor of one's own volition, will or choice); (b) competence (the need to perform successful social interactions with skills and abilities); and (c) relatedness (the need to establish positive emotional attachment with others). Some researchers have argued that the satisfaction of these needs would help one to experience self-motivation, self-determination (Ryan & Niemiec, 2009) and well-being (Sitzer & Stockwell, 2015). Otherwise, individuals are more likely to experience feelings of demotivation, inadequacy, passivity and ill-being (Ryan, Rigby, & Przybylski, 2006). If a painting therapy is implemented in such a way to satisfy the needs (i.e. sense of autonomy, competence and relatedness) of children that show externalizing behaviors, it is likely that they are able to regulate their feelings, emotions (Pears, Kim, Healey, Yoerger, & Fisher, 2015) and connectedness to others. Consequently, they would experience increased quality of life.

Previous related studies have investigated the effectiveness of painting therapy for internalizing behaviors (Khodabakhshi Koolae, Vazifehdar, Bahari, & Akbari, 2016) and anxiety disorders (Khadar, Babapour, & Sabourimoghaddam, 2013). In the current work, we aimed to identify the effectiveness of painting therapy program on externalizing behaviors in a sample of Iranian children with ID.

Method

Participants

The participants consisted of 60 male children with ID (mean age = 12, SD = 3.5) from 20 special schools in Tehran, Iran. We conducted a priori power analysis according to the statistical formulae reported by Röhrig, Du Prel, Wachtlin, Kwicien, and Blettner (2010). Based on the results ($\alpha = 0.05$ and $\beta = 0.10$), the recruitment goal was 30 participants per group. The process of recruitment is shown in Figure 1.

Ethics

Ethical endorsement was received from the University of Tehran before the implementation. The research goals were explained to all parents before signing the consent form. They were also guaranteed on the confidentialities and the rights to withdraw from the study anytime.

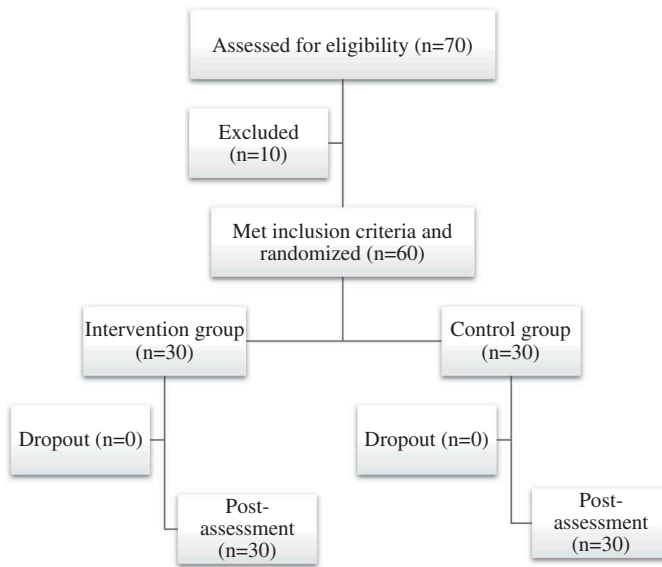


Figure 1. Consort flow chart for the recruitment process.

Procedure

From these 20 special schools, 4 schools (1 school was selected from each zone: north, south, east and west) were randomly selected. Then, in order to evaluate the participants' intelligence, three tests (i.e. Bender Gestalt Test, Goodenough–Harris Test and Raven's Progressive Matrices) were conducted. After that, in order to evaluate the externalizing behaviors of children, parents were requested to complete the conditional reasoning problems (CRPs).

Measures

Conditional reasoning problems (James et al., 2005)

CRP consists of 22 items designed to measure externalizing behaviors, such as beating, shouting, tearing up books, grabbing hold of others' hair and spitting. Items are rated on a 4-point Likert scale ranging from never (0) to always (3). The score ranges potentially from 0 to 66. An Iranian study suggested that CRP had an acceptable reliability (Zand-Karimi, Yazdi, Khosravi, & Dehshiri, 2016).

Bender Visual Motor Gestalt Test (BVMGT; Brannigan, 2003)

BVMGT consists of nine designs. Participants are requested to redraw each design on a piece of white paper. This test is used to detect the emotional problems of children, if any. An Iranian study reported that BVMGT had an acceptable reliability (Tahmasebi, Mafakheri Bashmaq, Emad-Al-Din, & Rezaei, 2016).

Goodenough–Harris drawing test (Harris & Pinder, 1974)

This test assesses the intelligence of children between 11 and 17 years old, and it can be taken by individuals or groups. There is no time limit for the test. Normally, the child

would finish the painting within 5–10 min. An acceptable reliability (α : 0.81) reported for this measure in a sample of Iranian children (Mehryar, Tashakkori, Yousefi, & Khajavi, 1987).

Raven's Progressive Matrices (Raven, 1998)

It consists of five visual items used to evaluate the general cognitive ability. An Iranian study reported an acceptable reliability for this measure (Lavasani & Stagnitti, 2011).

Painting therapy as an intervention program

Painting therapy program was provided to the intervention group (12 weeks; two sessions per week). Each session lasted for 45 min. Painting equipment such as marker, color pencil, crayon, gouache and water color were given to the children. In the first session, they were taught on how to use gouache, water color and other tools. In the subsequent sessions, they were given a white sheet of paper to paint freely. At the end of each session, the students were asked to briefly explain to the tester and other students their drawings. Meanwhile, the control group did not receive any intervention program.

Data preparation and analysis

Statistical Package for the Social Sciences 20 (SPSS 20) was utilized to analyze the data such as mean, standard deviation, independent *t*-test and repeated-measure Analysis of Variance (ANOVA) for comparing the mean values of aggressive behaviors in both groups. All data were checked for normality distribution using the Shapiro–Wilk test. The Shapiro–Wilk test is usually used for detecting normality for small sample size (Razali & Wah, 2011). The outliers were checked by box plot. A visual check showed that the data were normally distributed.

Results

Baseline comparison of the intervention and control groups for externalizing behaviors

Baseline assessments (pretest) were performed before randomization. The independent-sample *t*-test was conducted to detect any significant differences between the two groups for externalizing behaviors at baseline measurement. The results showed that there was no significant difference (Levene's Test for Equality of Variances (F): 1.87, p : 0.18) in the mean values of externalizing behaviors between the intervention group (M : 51.56, SD : 0.70) and the control group (M : 52, SD : 0.73).

Secondary evaluation of externalizing behaviors

After conducting the painting therapy program, the mothers of children were requested to complete the questionnaires. A two-way repeated-measure ANOVA was computed to assess the differences in the mean scores of externalizing behaviors before and after the painting therapy program for both groups. Effect sizes of 0.01, 0.06 and 0.14 are considered

to be small, medium and large, respectively (Cohen, 1992). The main effect for the group was significant ($F = 89.05$, $p < 0.001$), suggesting a statistically significant difference ($p < 0.01$) in externalizing behavior scores from pretest ($M = 52$, $SD = 0.73$) to posttest ($M = 45$, $SD = 0.80$) for the intervention group. However, there was no significant difference ($p < 0.01$) in externalizing behavior scores from pretest ($M = 51.56$, $SD = 0.70$) to posttest ($M = 51.90$, $SD = 0.67$) for control group. The results implied that the externalizing behaviors of children with ID were alleviated after participating in the painting therapy program.

Discussion

Based on the findings of the present study, it seems that painting therapy is an appropriate and efficient strategy for diminishing the externalizing behaviors of children with ID. The results from this study are in agreement with those reported in the previous studies (Choi, Lee, & Lee, 2010; Smeijsters & Cleven, 2006). Painting therapy is effective because most of the children found it enjoyable. Meanwhile, children are able to express their emotions (e.g. grief, fear and anxiety), feelings (e.g. wishes) and thoughts through projection which would lead them to achieve social adjustment (Bowring, Totsika, Hastings, Toogood, & McMahon, 2017; Keulen-De Vos, Frijters, Cima, & Bogaerts, 2015).

Issue such as level of ID affecting the externalizing behaviors was not addressed in this study. The influence of level of ID on externalizing behaviors could be an interesting research topic. The sample of this study was limited to male children with ID; therefore, the present findings could not be generalized to female children with ID. It is recommended that further research should examine the effectiveness of painting therapy on externalizing behaviors in female children with ID. Also, the current work focused on children with ID. In our opinion, the painting therapy should be introduced for individuals with different special needs as well.

This study has revealed that painting therapy could abate the externalizing behaviors of children with ID in a substantial manner. Also, it is interesting to note that execution of painting therapy program is simple and economical.

Disclosure statement

No potential conflict of interest was reported by the authors.

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