

Music Therapy in Enhancing Learning Attention of Children with Intellectual Disability

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Abstract: Inattention is one of the significant problems that inhibit learning among children with intellectual disabilities. However, several strategies and therapies have been developed to solve the problem. This study, therefore, investigates the effectiveness of music therapy in enhancing attention among children with intellectual disability. A pretest-posttest control experimental research design was adopted. The experiment was carried out for six weeks using Music Therapy Treatment Package on 24 children with intellectual disability that were randomly selected Modupe Cole Memorial Childcare and Treatment Home/School, Akoka, Yaba, Lagos. A validated Attention Observation Rating Scale (AORS) with a reliability coefficient of 0.88 was used for this study. Three hypotheses were tested in the study, and Analysis of Covariance (ANCOVA) was used for data analysis. This study revealed that music therapy is effective in enhancing attention among children with intellectual disabilities. Sex and level of severity of the disability were also tested as moderator variables, but they have no significant main or interaction effect with music therapy in enhancing attention for children with intellectual disability. The finding is that music therapy is significantly effective in enhancing attention for children with intellectual disability regardless of their sex or level of severity. It was concluded that attention deficit could be improved for children with intellectual disability. Therefore, Music therapy was recommended for use in the school with adequate teacher training.

Keywords: Music Therapy, Attention, Intellectual Disability.

INTRODUCTION

Lack of attention is a factor that inhibits learning, and it is common among children with intellectual disability (ID). It is one of the major externalizing and challenging behaviors among children with ID. This is reflective in various forms, including orienting to a task, selective attention, and sustaining attention to a task [1]. Inattention can profoundly affect the academic progress of persons with ID if it continues for a prolonged period. It often causes very significant social problems among them. Components of attention are termed as regulation of excitement and care, selective attention, sustained attention, attention span or divided attention, inhibition, and behaviour control [2]. Inattention can also have a cumulative effect on learners with ID, and this usually hinders their learning outcomes. With attention deficit, the brain fails to prioritize information, and the learner will not be able to apply concepts learned effectively.

Intellectual disability (ID) is a term used when a person has certain limitations in cognitive functioning that affect learning, retention, attention, memory, and the ability to think in abstract and make generalizations from one setting to another. Many individuals with poor

motor coordination can be improved by working with occupational therapists, physical therapists, or adaptive physical educators [3]. Most people in this category cannot successfully live an independent life; therefore, they need to live in a group home setting. However, children's attention can be enhanced using various strategies such as physical exercise and many other strategies [4].

Music therapy is an established health profession in which music activities are used within a therapeutic relationship to address individuals' physical, emotional, cognitive, and social needs [5]. Music therapy improves and sustains the attention of children's ability to correctly answer comprehensive questions relating to the information presented [6]. The therapeutic importance of music cannot be over-emphasized. The music focuses on deeper psychological processes and allows creative expression. It has the capacity to develop an individual's strength, self-esteem, expand verbal and non-verbal communication skills, social skills, ability to express emotions, improve the ability to pay attention to tasks, and improve memorization skills [7].

In psychology, music is often used to decrease excess behaviour or increase children's rate of a particular behaviour. More so, it focuses on accuracy and attention. Learning how to play an instrument can improve attention, concentration, impulse control,

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social functioning, self-esteem, self-expression, motivation, and memory [5]. The therapeutic effects of music in children have been documented by several researchers. As a therapy, it effectively enhances peer relationships, sustaining attention, enhancing human brain development, and promoting positive socio-emotional skills and social independence [8-10].

The efficacy of every therapeutic strategy often depends on some other personal attributes or variables peculiar to individuals receiving the therapy. Literature has established that age and sex play important roles in the efficacy of therapies in human treatment. The effects of these variables are subjective and may not be predictable. The effect of either sex or age could be positive or otherwise on the effectiveness of therapy and could be no effect at all. ID is a permanent condition with various behavioral dispositions that are highly challenging, both at home and in school settings. It has attracted various management strategies from various professionals, and these strategies include chemotherapy, psychotherapy, physical exercise, cognitive behavioral therapy, and many more [11]. Though there are many intervention strategies in managing challenging behaviors among persons with ID, many already validated strategies are less effective, some are not cost-effective for poor parents to afford, while some strategies have side effects that often cause other disabling conditions for individuals with this disability. This informs the researchers' investigation of the possible use of music as a therapy in managing inattention among children with ID.

Children with ID often have difficulty paying attention to teaching and learning activities, difficulty sustaining attention in work tasks or play activities, poor eye contact, disorganized and poor at planning, making teachers' efforts less result-oriented. A specific problem within the population of children with ID is a lack of attention to academic instruction or directions given and a lack of control of behaviour. Inattention has a profound effect on the learning ability of pupils with this disability. This is why this study investigated the effect of music therapy on inattention among children with ID.

METHOD

Design

The study adopted pretest-posttest control experimental design to determine the effectiveness of music as a therapy in the management of inattention among children with ID in the selected special schools.

Participants

Participants for this study comprised 24 children with moderate and severe ID, drawn from Modupe Cole Memorial Childcare and Treatment Home/School, Akoka, Lagos State, Nigeria.

Pure randomization of the participants was used to select and assign 12 male and 12 female pupils with ID. Two levels of severity of ID (moderate and severe) were considered in the selection of participants. Participants' age bracket is between 8 years to 18 years, respectfully. The consent approval for study participants was given by the parents through the school principal.

Instrument

The instrument used for data collection in this study was a validated self-developed Attention Observation Rating Scale (AORS, $r=0.88$) and Music Treatment Package (MTP). AORS was used to measure the level of inattention among the study participants before the commencement of treatment (pre-test) and after the treatment (post-test). MTP was used as a therapeutic strategy. The duration of the study was six consecutive weeks. The treatment was applied three times a week (Monday, Wednesday, and Friday), and each session lasted for two hours. MTP includes singing of ABC rhymes; children recorded songs in karaoke version, lyrics, playing of rhythm instruments (guitar), and dancing.

Analysis

Data collected for this study were tested using Analysis of Covariance (ANCOVA). The choice of ANCOVA was based on the use of both pre-test and post-test results for data analysis. It is used to test the main and interaction effects of categorical variables on a continuous dependent variables, controlling for the effects of selected continuous variables which co-vary with the dependent.

Hypotheses

Ho1 There is no significant main effect of music therapy in enhancing children's attention with intellectual disabilities.

Ho2 There is no significant interaction effect of music therapy, gender, and level of severity on attention enhancement of children with intellectual disability.

RESULT

As shown in Table 1, the result of the analysis revealed that at the df of 1 and 21, the $F_{\text{-ratio}} = 195.33$ and $p < 0.05$. The adjusted R^2 of 0.982 implies that music therapy accounted for 98.2% of the enhancement of the attention in the participants. This result implied that the null hypothesis was rejected. Therefore, the finding of this hypothesis was that music therapy was significantly effective in enhancing children's attention with ID.

As shown in Table 2, the result of the analysis of hypothesis 2 revealed that at df of 1 and 15, the $F_{\text{-ratio}} = 0.479$ and $p > 0.05$. The adjusted R^2 of 0.985 implies that the interaction effect of music therapy, gender, and severity level accounted for 98.5% of the variance of attention enhancement of the participants. This result

implied that the null hypothesis was accepted. Therefore, the finding of this hypothesis was that the interaction effect of music therapy, gender, and level of severity has no significant impact on attention enhancement of children with intellectual disability. This showed that the interaction effect of music therapy, gender, and level of severity of the participants does not have a significant effect but highly account for the variance of the attention of children with intellectual disability.

DISCUSSION

The results of this study revealed that music therapy is effective in enhancing the attention of children with ID. The efficacy of music therapy on enhancing attention among children with ID was established by

Table 1: ANCOVA of the Effect of Music Therapy on Attention Enhancement of Children with Intellectual Disability

Source	Type III of Squares	Sum Degree of Freedom	Mean Square	F-ratio	p-level	Partial Eta Squared
Corrected Model	2380.578 ^a	2	1190.289	640.147	0.000	0.984
Intercept	178.589	1	178.589	96.047	0.000	0.821
PRE	0.536	1	0.536	0.288	0.597	0.014
Music Therapy	363.200	1	363.200	195.332	0.000	0.903
Error	39.047	21	1.859			
Total	30779.000	24				

^aR Squared = 0.984 (Adjusted R Squared = 0.982). Dependent Variable: Post-Test Score.

Table 2: ANCOVA of the Interaction Effect of Music Therapy, Gender, and Level of Severity on Attention Enhancement of Children with Intellectual Disability

Source	Type III Squares	Sum Df	Mean Square	F-ratio	p-level	Partial Eta Squared
Corrected Model	2395.185 ^a	8	299.398	183.756	0.000	0.990 ^a
Intercept	150.683	1	150.683	92.481	0.000	0.860
PRE	0.893	1	0.893	0.548	0.470	0.035
GRP	293.838	1	293.838	180.343	0.000	0.923
GENDER	0.905	1	0.905	0.555	0.468	0.036
LEVEL	0.335	1	0.335	0.206	0.657	0.014
GRP * GENDER	0.301	1	0.301	0.185	0.673	0.012
GRP * LEVEL	12.506	1	12.506	7.676	0.014	0.338
GENDER * LEVEL	0.831	1	0.831	0.510	0.486	0.033
Music therapy * gender * level of severity	0.798	1	0.798	0.490	0.495	0.032
Error	24.440	15	1.629			
Total	30779.000	24				

^aR Squared = 0.990 (Adjusted R Squared = 0.985).

the result of this study. With this finding, music therapy can be accepted as a strategy to enhance children's attention with ID. The finding conforms to the result in a study conducted by Ritblatt *et al.* [8], which revealed that a school-readiness music program positively affects preschool children's socio-emotional readiness to transition to kindergarten.

This result further reinforced Stanford University Medical Center's [9] findings on how music affects the brain. The study was done with classical music, and it was discovered that peak brain activity occurred between movements of larger bodies of music. The result revealed that the attention of individuals is raised at the transition of movements. It was suggested that the time between movements could activate the brain in the area involving paying attention, making predictions, and updating events in memory. Music therapy improves and sustains attention and children's ability to correctly answer comprehensive questions relating to the information presented [6]. Music has long been a powerful way for people to connect, celebrate, entertain and remember [10]. Sussman [12] examined the effects of musical and non-musical elements on both alternating as well as sustained attention towards their nine developmentally disabled peers among preschoolers. Behavioural observations were collected during a passing game in which children passed both musical and non-musical objects with and without accompanying music. Results indicated that children showed the most sustained attention and the highest frequency of alternating attention when passing a musical object without accompanying music. Therefore, Sussman [12] suggests that musical objects can successfully target peer awareness in preschool children with developmental disabilities.

The result further revealed that the attention of an individual is raised at the transition of movements. It was suggested that the time between movements could activate the brain in the area involving paying attention, making predictions, and updating events in memory. Music as therapy can help improve children's attention, sustain attention, and improve the children's ability to answer comprehension questions correctly [6].

From the result of this study, it is also established that both male and female children with ID responded to music therapy as an attention enhancement strategy positively. The result supports Diana [14], who stated that the effectiveness of intervention for children with a developmental disability (Autism Spectrum Disorders) has no sex relationship. She emphasized that

outcomes of interventions for children with autism should be individualized, based on the child's strengths and weaknesses. Children with ID, like those with autism, are expected to be given individual attention [14]. The result of this study equally supports the findings in the study conducted by Oyundoyin and Adeleke [13] on the use of physical exercise in reducing hyperactivity among children with severe mental retardation. Oyundoyin and Adeleke [13] established that the difference between male and female children in their post-test scores on hyperactivity is insignificant.

The study concluded that there is no difference in physical exercise in reducing hyperactivity between males and females children with severe mental retardation.

The study also found that attention enhancement does not statistically vary with the severity of ID among the participants. This implies that pupils with both moderate and severe levels of intellectual disability responded to music in enhancing their attention the same way. This finding supports the result of the study carried out by Constantin [15] on a sample of nine children with disabilities, including mild to severe ID, Down syndrome, and autism. It was discovered that the severity of disability did not affect the efficacy of the treatment in the study.

SUMMARY OF FINDINGS

The result of the study revealed that:

1. Music has a significant effect in enhancing attention among children with ID.
2. Interaction effect of music therapy, gender, and severity of the disability does not have a significant effect but highly account for the variance of children's attention with intellectual disability.

CONCLUSION

Persons with ID have some challenging behaviors that often affect their ability to concentrate and learn effectively. The management of this challenging behaviour poses more problems to teachers, caregivers, and parents both at home and in schools. However, this study revealed that music is an alternative therapy that can increase the attention span of children with ID without gender or any other form of bias. Music as a therapy is an encouraging

development that should be given the necessary attention in managing inattention among persons with ID.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations were made:

1. Special educators should endeavour to use both live and recorded music to manage inattention among children with ID.
2. Curriculum planners should introduce music into the educational curriculum for children with ID.
3. Government should encourage music activities by employing music therapists in schools for children with ID.

STUDY LIMITATION

This study is limited in scope to children with ID with a specific interest in inattention, which inhibits learning. Only children within the moderate and severe levels of ID were selected as study participants. The geographical coverage of the study is Lagos State, Nigeria.

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