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Academic Functioning of Slow Learners: A Therapeutic Music Intervention

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Abstract

The objective of the present research was to explore whether a music therapy program might influence academic functioning of slow learners. A total of 20 children identified as slow learners (12 boys and 8 girls), evaluated in key areas of learning (ie, reading, writing, mathematical ability and IQ) relative to their current level of functioning, as determined by the "Seguin Form Board" test and the "draw a man" test, served as participants in this study. Music therapy was provided for 2 months on working days (Monday to Friday) between 10 and 11 AM for 45 minutes. Independent assessors evaluated the academic functioning at the beginning of the therapy and at the end. A pre-post assessment design was adopted. Paired *t* test was used to assess the change in academic functioning in reading, writing, and mathematical abilities. Results indicated that the music therapy program implemented in this research improved academic functioning of the slow learners who participated in this study.

Keywords

academic functioning, slow learners, music therapy

Music therapy is considered a related service modality in special education.[1] It can play an important role in education of many students who are crippled by various cognitive and biopsychosocial problems and thus need special instructional treatment. One such category is of slow learners. Slow learners are children who are doing poorly in school yet are not eligible for special education. Although slow learners may have special educational needs, they do not fit neatly into the special education system[2] as their intelligence scores are likely too high for consideration as a child with mental retardation and are likely too low for eligibility as a child with learning disabilities.[3] They lack concentration, retention, and abstract thinking. As a result they find it very difficult to keep up with their educational development. Slow learners usually require some levels of additional support to be successful. As these individuals make up approximately 14.1% of the school population, larger than the group of children with learning disabilities, mental retardation, and autism combined.[4] Thus, there is a growing need for help to remediate these children to provide them the best possible opportunities in this challenging world. This warrants intervention training for the slow learners, which can help these children to reach as near to normal development as possible. A study was conducted to assess the gain in mental abilities of slow learners through therapeutic music. The present research article focuses on music as a potential therapy for slow learners.

Alternative therapies work on the premise that the basic brain structure is operating similarly for everyone and, therefore, if somebody cannot read, write, or communicate it is not because there is something wrong with the brain but may be simply due to the fact that we do not have the right tools to communicate with such a person. These tools could well be found in various art forms. For instance, music is widely believed to have numerous benefits for children beyond those within the realm of music itself. These benefits are thought to contribute importantly to development by improving intellectual, motor, and social abilities and skills. Music in itself activates and brings joy and belief in oneself and can help people to feel that they can manage.[5] Music as an intervention can be of great value for those who have difficulties with self-control, thinking, social interaction, and keeping pace with the demands of their developmental age.[6] Music therapy deals with the controlled use of music and its influence on physiological, psychological, and emotional integration of the individual during treatment of an illness or disability.[7]

Behavioral science that is concerned with the use of specific kinds of music has the capacity to produce changes in behavior, emotions, and physiology.[8-11] Music, as an important factor in brain-based research learning, has been used to treat the reading deficiencies of slow learners because it induces the states of relaxed alertness and active processing.[12] The healing impact of music is especially felt in its use with slow learners who are able to join in activities with their companion without fear of failure and inferiority, for music has so many facets that

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they can all enjoy the satisfaction of achievement in some of them.[13] Slack[14] too studied the effect of music psychology on slow learners and found that music had positive psychological effects in the normalization of their pent up emotions and developed their abilities to the full. Music therapy program significantly enhanced social skills: turn taking, imitation, vocalization, initiation, and eye contact of children with moderate intellectual disability.[15] Music therapy techniques have been found to be effective in assisting behavioral and task performance improvements in special education students of all ages.[16] Daveson and Edwards[17] stated that music therapy for adolescents has been found to help improve their cognitive skills. Steele, Bass, and Crook[18] studied the "Mozart Effect" and indicated that music therapy can facilitate the process of self-expression in emotionally disturbed/learning disabled adolescents and provide a channel for transforming frustration, anger, and aggression into the experience of creativity and self-mastery.

Music can facilitate inclusion of students with disabilities by making previously difficult or impossible tasks feasible. During the past decade, a vast majority of the research has mainly focused on music and medicine,[19-21] music therapy,[22] music as the basis for learning,[23] usefulness of expressive arts,[24] and usefulness of music to treat students with emotional and behavioral disorders,[25-28] use of music to enhance reasoning,[29] and usefulness of music therapy to improve intelligence.[30,31] In a related study, Stambough[32] too found that music therapy along with performing arts combined with a great deal of patience helped to accommodate the special needs of the students.

A slow learner often has difficulty with higher order thinking and/or reasoning skills. Emotion is necessary for complex reasoning and learning.[33-35] Emotional limbic–prefrontal circuitries can be enhanced through music programs,[31,36] as music invokes emotions.[37] It will not only improve learning and memory but also can enhance emotional intelligence.[38] A strong relationship between music and reasoning[39] and the paucity of empirical research in the application of music therapy for slow learners provide the rationale to scientifically explore the curative power of music on slow learners. The present research was undertaken in an effort to strengthen the basic therapeutic technique through designing a methodology that investigated the efficacy of a music therapy program and its capacity to enhance the academic functioning of slow learners. For this purpose, Raga Asavari music played on the flute by renowned musician Hari Prasad Chaurasia was chosen as the therapeutic music.

Hypothesis

Therapeutic music will enhance academic functioning of slow learners in

1. reading ability,
2. writing ability, and
3. mathematical ability.

Method

Design

Pre-post assessment design was adopted to assess the efficacy of the therapeutic music. To analyze the significance of difference between preintervention and postintervention mean scores, paired *t* test was applied on all the dimensions of academic functioning, that is, reading, writing, and mathematical ability.

Sample

The study was conducted in private medical college and hospitals of Chandigarh, India. Twenty children participated in the training program. There were 12 boys and 8 girls. The youngest child was 8 years old and the oldest was 12 years old.

Materials

"Seguin Form Board" and the "draw a man" tests were used to identify their intelligence quotient (IQ) level. A cassette providing an hour of instrumental flute played in Raga Asavari (Indian classical music) was used as the therapeutic music intervention. The cassette player with headphones was utilized as the intervention means. The rationale and preference of choosing Raga Asavari in flute as the therapeutic music intervention is based on the premise that this raga is believed to have curative psychological characteristics.[40] Flute, historically, is used in Eastern cultures as an instrument in medicine and is thought to enhance fertility rites and has played a part in ritual magic ceremonies. After the human voice, the flute is thought to be the most effective instrument for healing because there is direct contact with the human breath.[41] It comes from a synthesis of mythology, historical artifacts, and artwork. Aside from historically, the flute appears in eastern culture, as something magical, as a "celestial gift" associated with/invented by the gods—"Osiris in Egypt; Pan or Athene in Greece; and Krishna in India."[42(pp135-136)] Almost every world culture has used the flute for ritual, healing, education, and entertainment. Meylan[42] quotes from Michel de Vascosan that "the flute calms the spirit and penetrates the ear with such sweet sound that it brings peace and an abeyance of motion unto the soul."

Procedure

The children were identified on the basis of their IQ level which was determined by the Seguin Form Board test and the draw a man test by independent educational evaluators. Only those children whose IQ level was in the 70 to 90 range in both these tests were included in the study. The reason to include only those whose IQ fall in the range of 70 to 90 was that they were attending traditional school regularly and were found to be potentially educable as per their test results. Potentially educable means that they would be able to succeed in the regular classroom with a little more support and guidance, which would make them capable to succeed in their regular classrooms at a level that could be compared with the students of average intelligence. Teachers'

Table 1. Levels of Academic Functioning

Level	Reading	Writing	Mathematics
0 (n = 6)	Not able to read	Not able to write	Not able to write or read numbers
1 (n = 8)	Can read 1 or 2 simple words	Can write name and/or 1 or 2 simple words	Can only write numbers
2 (n = 6)	Can read 3 word sentences	Can write sentences with 3 words or more	Can do single-digit calculations
3 (n = 0)	Can read with mistakes	Can write with mistakes	Can do 2-digit calculations

Table 2. Pre-Post Intervention Reading, Writing, and Mathematical Scores of Slow Learners

	Preintervention		Postintervention		
Academic Functioning Scores	Mean	SD	Mean	SD	*t* Ratio
Reading	39.83	8.25	47.97	11.24	3.19**
Writing	45.80	13.54	59.10	10.25	4.29**
Mathematics	32.57	4.99	36.93	8.32	2.47*

Abbreviation: SD, standard deviation.
*$P < .05$; **$P < .01$.

reports and parents' opinion were also taken into consideration through survey and interviews. Parental consents were taken in advance. The sample excluded children with emotional disorders, such as anxiety disorders or depressive disorders; hearing or visual defects; and/or any physical illnesses that would affect the training program.

The selected children were divided into 4 groups with 5 children each in the groups. Each group was exposed to instrumental flute music from 10 to 11 AM Monday to Friday for 2 months because Asavari is sung in late morning timings, that is, 10 AM to 12 noon. The participants were seated in such a way that they could not see each other, and they were instructed to listen to music through headphones for 45 minutes.

At the beginning of the training, a group meeting of the parents was called to discuss the problems of each child and to make them aware of the potential causes of slow learning. They were also made aware about the potential impact of the therapeutic music program. The academic functioning of each child was noted. At the end of the first month, progress was discussed with the participants' parents. After 2 months of the therapeutic music intervention, all the students were reassessed by the same measures, that is, test papers in reading, writing, and mathematics were conducted and evaluated by 2 external teachers who were blind to the initial level of functioning. The opinion of the parents regarding an overall change in academic functioning was noted. Paired *t* test was used to assess the improvement in academic functioning after the end of the training program.

Results

To assess the academic functioning, a 4-level scale was designed (Table 1). It consisted of assessment of reading ability, writing ability, and mathematical ability. All the participants demonstrated repeated difficulty in all subjects or showing academic performance 2 classes below the class in which they were studying at the time. Academic functioning at the intake was level 0 in 6 children, level 1 in 8 children, and level 2 in 6 children. There was no child in level 3 (Table 1).

The findings of the present study proved that academic functioning of the slow learners who participated in the study can be improved significantly, and this may have ramifications for the potential of children with learning disabilities, particularly, that a music therapeutic training program may have benefits. As it can be seen in Table 1, the initial intake of students in level 0 was 6. Table 2 revealed the gain in slow learners' ability after receiving 45 minutes of music therapeutic intervention for 5 days a week for 2 months in the form of instrumental flute music. From Table 2, it is evident that postintervention mean reading scores were higher (mean [M] = 47.97, standard deviation [SD] = 11.24) than the preintervention mean scores (M = 39.83, SD = 8.25). The difference between prereading and postreading scores reached highly significant level ($t = 3.19$**, $P < .01$). Similarly, postintervention mean scores on writing ability were higher (M = 59.10, SD = 10.25) than the preintervention mean scores (M = 45.80, SD = 13.54). The difference has been found to be statistically significant ($t = 4.29$**, $P < .01$). This table also indicated that the postintervention mean scores on mathematical abilities were higher (M = 36.33, SD = 8.32) than the preintervention mean scores (M = 32.57, SD = 4.99). The difference between preacademic and postacademic mathematical scores reached significant level ($t = 2.47$*, $P < .05$).

Table 3 indicated the efficacy of music therapeutic intervention in the form of a percentage. Four of the participants moved to one step higher, that is, to level 1 which means that 66.6% improved their academic level from level 0 to level 1, whereas 2 students (33.3%) remained at the same level. The similar trend can be seen for participants categorized in levels 1 and 2. Of the 8 students of level 1, 6 (75%) have shown academic improvement by shifting to level 2, but 2 (25%) of them remained at the intake level only; and 4 (66.6%) students out of 6 of level 2 have moved to the next

Table 3. Number and Percentage of Participants Showing Academic Improvement

Intake	Final	No.	% of improvement
Level 0	Level 1	4/6	66.6%
Level 1	Level 2	6/8	75%
Level 2	Level 3	4/6	66.6%
Intake	Final	No.	No improvement
Level 0	Level 0	2/6	33.3%
Level 1	Level 1	2/6	25%
Level 2	Level 2	2/6	33.3%

Table 4. Parents' Opinion on Academic Improvement

Improvement	No. of Participants	%
Some improvement	14/20	70
No improvement	6/20	30
Language	12/20	60
Mathematics	3/20	15
Aptitude	17/20	85

academic level, that is, level 3; and 2 students (33.3%) did not show any sign of academic improvement. Overall, 70% (14) of children had significant improvement in their academic functioning, as evidenced by the outcome of the final test paper (Table 3). This progress was also evident in the parents' opinion. Eighty-four percent of parents reported that their children developed more self-esteem and that their aptitude for studies had improved (Table 4). Though the remaining 6 students showed signs of improvement in their behavior as per their parent's opinion, their improvement was not significantly noticeable in academics.

Discussion

The aim of the research was to facilitate change in the students' behavior with particular emphasis on their academic progress and their classroom behavior and social interactions. During the early development of the research the first challenge was to find appropriate repertoire so that the aim of the research could be implemented. The secure and supportive atmosphere provided by the therapeutic music allowed the students to freely interact. Since the beginning of the therapeutic music program in this research, there have been significant changes in the children's behavior, attitude, academic achievement, and social interaction. These changes were revealed in the academic evaluation scale of assessment, the teacher evaluations, parents' opinions, and the observations made by the therapists. After the training program, majority of children had improved aptitude for learning. The results substantiated previous researches which state that the positive effects of background music on the coordination of pupils with special educational needs and emotional and behavioral difficulties[43]; music is effective in raising the level of intellectual development of the children with mental retardation[44]; and the level of intelligence of slow learners can be improved with the addition of music in their general education.[14] Slack found significant improvement in the skills in all the subjects being taught to the students as a result of music education.

In the present sample, the children gained more from the music therapy program than from several years of normal schooling. The findings prove that due to intervention there was gain in all aspects of mental abilities of experimental group slow learners. The care, education, and training of the slow learner can make it possible for him or her to cover up earlier deficiencies and become an achiever. The basic fact is that these children are grossly ignored in the mainstream education. In a class of 40 or 50 students, the teachers are not able to provide individual attention to those who have difficulties in studies. Remedial education for slow learners and children with learning disorders might be provided in all schools. A practical consideration would be for the school to have a training room, where a therapeutic music or music therapy could be provided to those in need. The teacher can identify those children who need special attention with draw a man test as this test requires only a pencil and paper. The usefulness of this test was shown in studies conducted earlier. Ideally, a slow learner needs detailed psychological and educational evaluation by a team consisting of clinical psychologist, child psychiatrist, special educator, and other experts. Facilities for such a detailed assessment are not available in majority of the schools in developing countries. By developing a modified curriculum based on the research with slow learners, there is a strong likelihood that more slow learners will pass high-stakes tests.[45] The implication of the present experiment is that many schools can set up a training room with minimum expenditure where the slow learners identified by the class teacher can go to the training room for music therapy for fixed hours. The training room should have a special music therapist who should be able to give appropriate therapy to the child, considering his or her strengths and weaknesses.

The *t* value in reading (3.19**), writing (4.29**), and mathematical ability (2.47**) depicting the significant difference between preintervention and postintervention mean scores do seem to indicate that music therapeutic intervention resulted in an increase in all aspects of mental abilities of slow learners. This low-cost therapy has the potential to improve the academic functioning of slow learners. Moreover, it provides important dimensions from the counseling point of view to improve functioning of this chosen sample. Therapeutic music programs and music therapy can be a routine feature within a specialized training or provided by a person with music therapy training appointed for such a purpose. Although this study provides preliminary evidence for the efficacy of a specialized music therapeutic program, further research is necessary to determine the long-term outcomes. Creating an evidence base in music therapy for this client group may assist music therapy clinicians in establishing best practices in mental health care. New measuring tools need to be developed and tested to ensure their efficacy. The literature needs to be enriched to include quantitative studies measuring the effects of music therapy

on slow learners as music therapy offers potential to attend to the cognitive deficits that few other interventions can address. Music therapy seems to contribute to cognitive, psychosocial, and academic development. In this study, therapeutically designed music provided practical guidelines that served as a basis for the use of specifically designed therapeutic music to accommodate children with learning difficulties.

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Bio

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