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3.1 INTRODUCTION

The general outline of the present study along with the elucidation of major concepts in the study, namely, ADHD, Music Therapy and Dance Therapy were incorporated in the first chapter. This chapter provides a review of literature on the major concepts under study. It includes studies that show the relative efficacy of music and dance on attention. However, it should be noted that although over the past few years a lot of research involving ADHD has been carried out, there is a dearth of research involving ADHD and music, or ADHD and dance. As both music and dance as therapy are relatively new interventions, research in these fields has a long way to go.

3.2 MUSIC THERAPY

Since time immemorial music has played an important part in human life, be it in religious events, rituals or celebrations. Music is an incredibly powerful form of expression that cannot be denied. Over the years, several therapists, teachers and mental health practitioners have come to realize the importance of music. Until the 1950’s the effect of music on human life had not been systematically studied.

One of the pioneers of research on music and human behavior was Cattell R.B. who believed that unconscious aspects of personality that are

In the late 1950’s, Tomatis (cited in Campbell, 2005) began his experiments in auditory stimulation for children with speech and communication disorders using Mozart’s music. In the 1990’s experiments were begun at the University of California, Irvine, U.S.A. with Mozart's music and spatial intelligence assessments. As recently as 2001, researchers in England used Mozart's music to study its effect on epilepsy. Because of its structural simplicity and not very emotional expression, Mozart’s compositions have been researched widely for its usefulness in modifying attentiveness and alertness. Owing to the fact that his compositions are not over stimulating Mozart’s music have become popular research tools. In recent years a lot of attention has been paid to what is known as The Mozart Effect. This is an inclusive term signifying the transformational powers of music a propos health, education, and well-being. It represents the general use of music to reduce stress, depression, or anxiety; induce relaxation or sleep, activate the body, and improve memory or awareness. Innovative and experimental uses of music and sound can improve listening disorders, dyslexia, attention deficit disorder, autism, and other mental and physical disorders and injuries (Campbell, 2005).
From its humble beginnings in the 1950’s up until now research on music has come a long way. There have been attempts to study music and its effect on a variety of psychological disorders, including ADHD. In 2003, Jackson carried out a survey of music therapy methods and their role in treating early elementary school children with ADHD. In her study Jackson cited that ADHD has been gaining a lot of interest in media as well as research. Results of her survey indicated that music therapists often utilize a number of music therapy methods in the treatment of children with ADHD. They often address multiple types of goals, and treatment outcome is generally perceived to be favorable. In addition, referrals were most often made by parents or teachers of the child (Jackson, 2003).

Pratt and colleagues (2004) studied 19 children, aged seven to seventeen years with ADD, while playing recordings of Mozart during three-times-a-week brain wave biofeedback sessions. 100 Masterpieces, Vol. 3: Wolfgang Amadeus Mozart was the music used. It included the selections of Piano Concerto No. 21 in C, The Marriage of Figaro, Flute Concerto No. 2 in D, Don Giovanni and other concertos and sonatas. The group that listened to Mozart had reduced their theta brain wave activity (slow brain waves often excessive in ADD) in exact rhythm to the underlying beat of the music, and displayed better focus and mood control, diminished impulsivity and improved social skill. Among the subjects that improved, 70% maintained that improvement six months after the end of the study without further training (cited in Amen, 2005).
In 1996/1997, Panksepp, Ross, and Narayan attempted to study Biochemical Changes as a result of Auditory Integrated Training (AIT)-type Modulated and Unmodulated Music. AIT is said to address the hearing distortions, hyper acute hearing, and sensory processing anomalies which cause discomfort and confusion in persons suffering from learning disabilities, including autism (Stehli, 1995, cited in Australian Government Department of Health and Ageing, 2006). These hypersensitivities are believed to interfere with a child’s attention, comprehension and ability to learn (MADSEC, 2000). In this experiment they exposed chicks to four conditions, AIT-type modulated music (using the EASY Disc 1, produced by Vision Audio, Inc., Joppa, MD); unmodulated music (the same music source but not processed); human voices (male and female); or no sound. For both the modulated and unmodulated conditions, neurochemical assays indicated a dramatic increase in nor epinephrine and its principle metabolite, MHPG. The researchers also found increases in brain dopamine and its metabolite (HVA). Hence, music has an effect on the chemical composition of human beings (Panksepp, Ross, Narayan 1996/7).

Abikoff et al. (1996) evaluated the impact of auditory stimulation on the academic task performance of children with ADHD. Twenty boys with ADHD and 20 non-disabled control boys, worked on arithmetic problems while listening to either music, speech or in silence. While there was no significant difference for the control group in any condition, the ADHD
group performed significantly better while listening to music than any other condition.

Rickson and Watkins (2003) undertook a study to investigate whether music therapy is effective in promoting prosocial behaviors in aggressive adolescent boys who have social, emotional, and learning difficulties. The study included 15 boys living in a residential school, 11 were in the Music therapy group while 4 were in the control. While no definite treatment effects could be detected, results suggested that a music therapy program promoting autonomy and creativity may help adolescents to interact more appropriately with others in a residential villa setting, but might also lead to a temporary mild increase in disruptive behavior in the classroom. They also concluded that a more structured program and smaller numbers will be more beneficial for boys with ADHD.

Sutoo and Akiyama (2004) studied the effect of music on blood pressure in spontaneously hypertensive rats (SHR). According to them previous studies had indicated that calcium increases brain dopamine synthesis. Increased Dopamine levels reduce blood pressure in SHR. The effects of music on this pathway were examined. Exposure to music significantly increased serum calcium levels and neostriatal Dopamine levels.

Another area of music research that has gained popularity in recent times is hemi-sync music or meta-music. Hemi-Sync uses blended and sequenced sound patterns which can gently lead you into focused, whole-
brain states of consciousness. Hemi-Sync facilitates the synchronization of electrical wave patterns in the left and right hemispheres of the brain (The Monroe Institute, 2005). Amen in her practice as well as in her personal life, has observed the positive effect of hemi-sync music on the behavior of children with ADHD (Amen, 2005).

In a study to compare the impact of instructional and improvisational music therapy approaches on the level of motor impulsivity displayed by adolescent boys who have Attention Deficit Hyperactivity Disorder (ADHD), Rickson employed a combination of a multiple contrasting treatments and an experimental control group design. No statistical difference was found between the impact of the contrasting approaches as measured by a Synchronized Tapping Task (STT) and the parent and teacher versions of Conners' Rating Scales (Conners, 1997), Restless-Impulsive (R-I) and Hyperactive-Impulsive (H-I) subscales. However, while no firm conclusions were drawn, the instructional approach reduced the impulsive and restless behaviors in the classroom. Further, over the period of the study, both music therapy treatment groups significantly improved accuracy on the STT, and teachers reported a significant reduction in Conners' DSM-IV Total and Global Index subscale scores. These findings tentatively suggest that music therapy may contribute to a reduction in a range of ADHD symptoms in the classroom, and that increasing accuracy on the STT could be related to improvement in a range of developmental areas, not specifically motor impulsivity (Rickson, 2006).
3.3 DANCE THERAPY

Though dance has been part of healing rituals from time immemorial, it was only in the 1940’s that it was recognized as a distinct therapeutic modality (Kashyap, 2005). As can be appreciated, it is a relatively new form of intervention and as a result there is a dearth of research on Dance and Mental Health, and more specifically, ADHD.

Presently, a few studies linking dance or movement therapy and ADHD have been found by the researcher. Although using movement and dance seems to be a coherent choice of treatment as the primary symptoms of ADHD, other than inattention, hyperactivity and impulsivity are body tensions, fragmented body movement and disturbed body image. These symptoms can be contended with, by working on breathing exercises, rhythm and movement (Grönlund et al., 2005).

Barkley (2004), stated that children with ADHD benefit the most from regular exercise as movement exercise works just as a stimulant would and increases the dopamine in the brain (Barkley, 2004, cited in Grönlund et al., 2005) which is associated with ADHD (Cheon et al., 2003).

In 2005, Jeong et al. assessed the profiles of psychological health and changes in neurohormones of adolescents with mild depression after 12 weeks of Dance Movement Therapy (DMT). They found that plasma serotonin concentration and dopamine concentration changed in the DMT group. These results suggest that DMT may stabilize the sympathetic nervous system. This finding maybe of significance in the treatment of ADHD.
In 2004, Acalogic Inc.-Academic Research and Consulting explored the use of an activity program designed with intense aerobic exercise as a successful method of treatment for ADHD children. In the study, ADHD diagnosed children were subjected to 6 weeks of intense aerobic activity, after which significant beneficial changes for the subjects involved in the program were observer based on Conner’s Rating Scale. A multivariate analysis comparing pre and post scores of the behavioral data revealed that the intervention process of frequent and intense exercise used in this experiment had a significant and beneficial impact on the behavior of its ADHD subjects (Acalogic Inc., 2005).

In 2005, Grönlund et al. conducted a pilot study concerning short-term DMT for two young boys with symptoms related to ADHD. The aim of the study was to access the effect and value as well as describe the process of DMT as an alternative treatment. The intervention lasted for ten sessions and took place once a week for the period of three months. This intervention produced positive results in both the boys, although the positive effects were greater for one of the two boys. It was observed that motor functions improved and behavioral and emotional symptoms reduced. This study generated hypotheses that will be tested in forthcoming studies.

3.4 SUMMARY

Considering the field of Dance and Music as therapy is relatively new, there is an obvious paucity of relevant research. Nevertheless, the
available literature supports the relative efficacy of Music and Dance/Movement as regards ADHD.

This evident dearth in research adds support to the importance of the present study.

As mentioned in Chapter one, ADHD has been conventionally treated with psychopharma drugs, but in spite of their relative effectiveness a need for alternative forms of therapy has been felt owing to their sometimes severe and fatal side effects.