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fakulta

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**GROUP MUSIC THERAPY  
FOR CHILDREN WITH AUTISM SPECTRUM DISORDER**

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**Doctoral study program: Music Theory and Education**

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## Declaration of Originality

I, LU YUE (Student ID Number 80052169) declare that this dissertation entitled “Group Music Therapy for Children with Autism Spectrum Disorder” and submitted as partial requirement for Ph.D. post graduate study program of Music Theory and Education is my original work and that all the sources in any form (e.g. ideas, figures, texts, tables, etc.) that I have used or quoted have been indicated and acknowledged in the text as well as in the list of reference.



Signature

21/04/2017

Date

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## **Abstract**

With the increasing number of children diagnosed with Autism Spectrum Disorder (ASD), the education and development of children with ASD have become topics under heated discussion. Music therapy for children with special needs is lacking of influential theoretical outcome in China due to limited resources. In either public or private schools, given the limited funding, group therapy practice would be an optimal choice. Especially in China, a developing country, effective group therapy practice would be beneficial for autistic children.

This research was designed to demonstrate a practical model of group music therapy for children with Autism Spectrum disorder (ASD). Mixed methods were employed including an action research and a single-subject research. There were 5 phases of the research implementation including measurement and planning, acting, reflecting, modification and acting, and evaluation and discussion. Objects of this research were five children who were diagnosed with ASD. Their ages were from 7.5 years to 9.5 years. Other participants involved in this research included a researcher, a therapist, four class teachers, five guardians of children and an assistant.

Having investigated the developmental needs of children and planed therapy sessions within two months, the researcher conducted twelve sessions of group music therapy within six weeks. Detailed process of implementing group music therapy including deciding goals and objectives, choosing and revising materials, applying methods and evaluating the group progression has been presented in the thesis.

The results with ATEC score of the group indicate (1) the group got a little improvement after group music therapy; (2) there was a significant difference between male and female participants in the therapy effect; (3) there was a significant difference in the rating between class teachers and guardians. The results of every single group member with ATEC score indicate that two girls in this group gained significant improvement and other three boys achieved improvements only in several developmental areas. In summary, except for the worsening in health/physical/behavior, the improvements were evident in areas of speech, sensory/cognitive awareness and sociability.

The results of interviews from the therapist, class teachers and guardians indicate every child gained different improvements at various degrees such as improvement in attending attitudes, emotional control, accepting new things, expressing actively, imitation ability and coordination.

The results both of single-subject research and action research demonstrated the unique functions that group music therapies performed for children with ASD. It includes specific improvements in joint attention, communication, interpersonal interaction, cooperation, and imitation. Apart from progress as a whole group, improvements in relaxation, self-confidence, and cognition were also detected in different individuals.

With the analysis of measurement results and interviews results, the researcher discussed the implications of group and individual achievements, and compared the evaluating results from class teachers and that from guardians. The result demonstrated the unique functions that group music therapies performed for children with ASD. It includes improvements in joint attention, communication, interpersonal interaction, cooperation, and imitation. Apart from progress as a whole group, improvements in relaxation, self-confidence, and cognition were also detected in different individuals.

To conclude, suggestions on the practice of group music therapy for children with ASD have been proposed, including principles of session planning, goals and objectives setting, format, materials, methods and evaluations.

**Key words:** children with ASD, music therapy, group therapy, practice

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## **1. Introduction**

As for children with Autism Spectrum Disorder (ASD), who are characterized by deficits in social communication and social interaction and presence of restricted interests, they have gained much attention in recent years. According to the new data from Centers for Disease Control and Prevention in the United States, the estimated number of children identified with ASD continues to increase; about 1 in 68 children (or 14.7 per 1,000 8 year olds) were identified with ASD in the 11 communities they surveyed (Centers for Disease Control and Prevention, 2014). With more children identified with ASD, the education and development of children with ASD have become topics under heated discussion.

There are about 6 million disabled people in Sichuan Province (one of 32 provinces in China), and 770 thousand disabled people in Chengdu (provincial capital of Sichuan Province) where the researcher lives. Due to insufficiency from the government investment and the lack of teachers, all kinds of special education schools (centers) and some general schools only can accept around 6,000 disabled students in Chengdu (Chengdu Municipal Government, 2013). According to Chinese national plan, there should has at least one special education school in a city or a county, which has a population over 300,000 and quite a lot of disabled children and teenagers until 2020. In addition, the national plan requires enhancing the quality and quantity of special educators (National Ministry of Education, 2010). Recently, Chinese Ministry of Education makes a requirement that there should be a reasonable training system with high professional level for special educators, and the quantity of special educators should meet the needs of special schools (National Ministry of Education, 2012).

Music therapy, an aspect of the intervention for children with special needs, are lack of influential theoretical outcome in China. The quantitative and qualitative studies are staying at low level. It was suggested that the methodology should be diverse with the approach of combining quantity and quality research (Du, 2011). On the other hand, it was stated that the lack of professionals was a crucial problem impeding the development of music therapy in China. In-service clinicians and educators still need to improve their professional skills (Ma, 2010). In addition, the resources of music therapy for children

with special needs are still very limited. It was realized and suggested that music therapy should apply to the rehabilitation of children with special needs in the future (Lu, 2015).

The results of a related investigation (Lu, 2014) shows: (1) the lack of music therapy professionals is the primary problem in Chinese respondent institutions; (2) resources are insufficient; (3) the role of music therapy is not recognized clearly in China. The professional skills of in-service clinicians and educators must be improved.

Although music therapy has been an established profession since the 1950s, there may still be misunderstanding regarding its goals and practice. In many cases, the music therapist is not free to establish the schedule and selection of children for individual and group music therapy (Goodman, 2007, pp.107). In both public and private schools, economic constrains demand group therapy practice. There is an ethic need for educator to train students for group therapy as well as individual therapy and therefore help beginning therapists meet the realistic demands of clinical practice today (Goodman, 2007) . Especially in China, a developing country, effective group therapy practice would be beneficial for autistic children.

### **1.1 Purpose of research**

The **aim** of the research is to demonstrate a practical model of group music therapy for children with Autism Spectrum disorder (ASD).

The specific **objectives** of the study include:

- To review practice and researches on music therapy for children with ASD.
- To design a series of group music therapy sessions related to Chinese resources and circumstance.
- To evaluate effects of the sessions.
- To discuss approaches of improving the practice of group music therapy for children with ASD.

### **1.2 Research questions**

This study is supposed to answer the following questions related to the practical model of group music therapy for children with ASD in China:

- How about the current practice and researches on music therapy for children with ASD?

- Why the group music therapy was choosing for children with ASD?
- What kind of goals should be planned?
- What kind of materials could adapt?
- What kind of methods could be employed?
- How to evaluate the effects of the sessions?
- What could be improved in the future of group music therapy for children with ASD?

### **1.3 Definition of terms**

#### ***Music therapy***

As a senior theorist in the field of music therapy, Bruscia (1998) in his book *Defining Music Therapy* stated that ‘Music therapy is a systematic process of intervention wherein the therapist helps the client to promote health, using music experiences and the relationships that develop through them as a dynamic forces of change’.

#### ***Group therapy***

Group therapy began with the model known as Activity Therapy (Montgomery, 2002). Activity therapy involves the clients in activity and is used to engage patients in activities such as cooking, exercise, craft, artwork and music-making. Group therapy (Roth, 2016) is a form of psychotherapy in which one or more therapists treat a small group of clients together as a group. The term can legitimately refer to any form of psychotherapy when delivered in a group format, including Cognitive behavioral therapy or Interpersonal therapy, but it is usually applied to psychodynamic group therapy where the group context and group process is explicitly utilized as a mechanism of change by developing, exploring and examining interpersonal relationships within the group. More specialized forms of group therapy would include non-verbal expressive therapies such as art therapy, dance therapy, or music therapy.

#### ***Irvin Yalom’s description of ‘curative factors’***

Music therapy in mental health services is often offered in a group format. Yalom (2005) in his 5th edition of *The Theory and Practice of Group Psychotherapy* shows his research on 11 Curative Factors of Group Treatment as followed:

- **Instillation of Hope** - faith that the treatment mode can and will be effective.

- **Universality** - demonstration that we are not alone in our misery or our "problems".

- **Imparting of information** - didactic instruction about mental health, mental illness, psychodynamics or whatever else might be the focal problem of the group.

- **Altruism** - opportunity to rise out of oneself and help somebody else; the feeling of usefulness.

- **Corrective recapitulation of primary family group** - experiencing transference relationships growing out of primary family experiences providing the opportunity to relearn and clarify distortions.

- **Development of socializing techniques** - social learning or development of interpersonal skills.

- **Imitative behavior** - taking on the manner of group members who function more adequately.

- **Catharsis** - opportunity for expression of strong affect.

- **Existential factors** - recognition of the basic features of existence through sharing with others (e.g. ultimate aloneness, ultimate death, ultimate responsibility for our own actions).

- **Direct Advice** - receiving and giving suggestions for strategies for handling problems.

- **Interpersonal learning** - receiving feedback from others and experimenting with new ways of relating.

Many music therapists working with groups have found existential psychotherapist Irvin Yalom's description of 'curative factors' specific to group work helpful (Bunt & Stige, 2014, pp.133). These four could be related to music therapy and serve to illustrate this way of thinking about group practice: Instillation of Hope, Universality, Imparting of information, Altruism.

### *Goodman's group music therapy*

Group music therapy can be activity-based but it is not typically infused in the naturalistic setting of the child moving through the school day since it typically takes place in a designated time and place (Goodman, 2007, pp.85). The model of activity therapy appears to best suit groupwork with children in music therapy (Goodman, 2007, pp.78). The rationale would be as follows (Slavson and Schiffer, 1975):

Making music constitutes activity can be viewed as both work and play;

Activity therapy engages clients functioning on multiple levels, frequently the case with music therapy groups;

Activity therapy is brought into the literature of group therapy appropriate for children.

As Goodman (2007) described, the key steps scheduled the group music therapy could be concluded as followed:

- Decide individual or group music therapy with 3 factors: development age, sensory profile and musicality.
- Set goals according to the following 4 steps:
  - Step 1: A. Review of team information
    - B. Organization of ideas with the developmental grid
  - Step 2: Evaluating group priorities.
  - Step 3: Evaluation priorities for group music therapy goals.
  - Step 4: Considering stumbling blocks
- Formulate objectives with quantitative criteria.
- Choose appropriate materials to accommodate the developmental needs of the child in the group.
  - Consider methods linked to goals and objectives.
  - Complete a session plan.
  - Implement the session
  - Measure the progress with 3 types of evaluation: weekly objective, weekly subjective and progress report.
- Modify the treatment approach or revise the treatment plan as necessary.

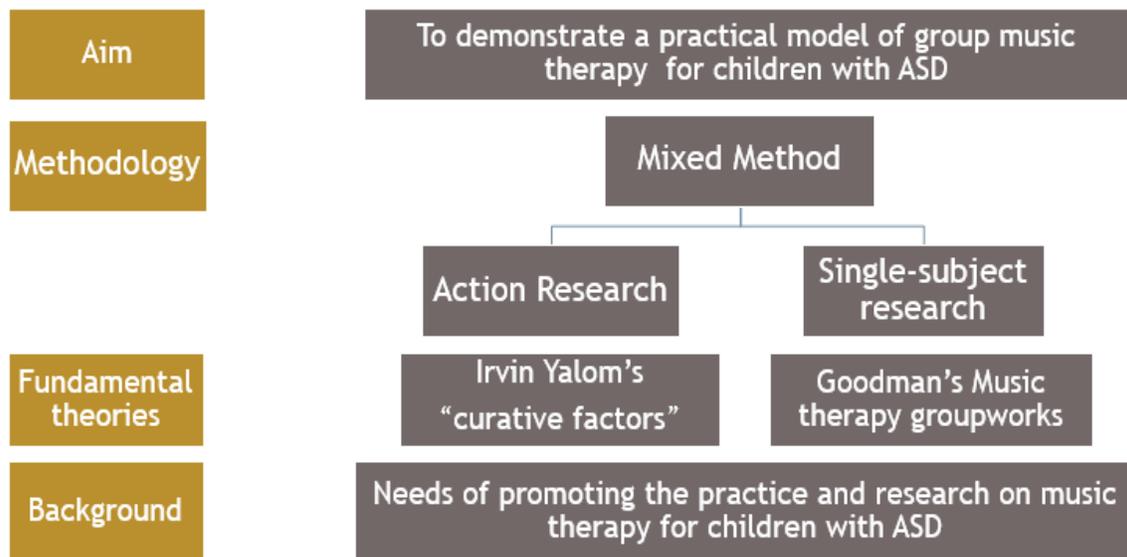
### ***Autism spectrum disorders***

In 2013, the latest version of the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-V; American Psychiatric Association, 2013) was released, and in this new version, a single umbrella disorder is used to reflect a continuum model in the diagnosis. The current research adopted the DSM-5 criteria for ASD.

According to the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-V, P49; American Psychiatric Association, 2013), Autism Spectrum Disorder (ASD) encompasses disorders previously referred to as early infantile autism, childhood autism, Kanner’s autism, high-functioning autism, atypical autism, pervasive developmental disorder not otherwise specified, childhood disintegrative disorder, and Asperger’s Disorder. The essential features of autism spectrum disorder are persistent impairment in reciprocal social communication and social interaction (Criterion A), and restricted, repetitive patterns of behavior, interests, or activities (Criterion B). These symptoms are present from early childhood and limit or impair everyday functioning (Criteria C and D).

#### 1.4 Research framework

Figure 1 Research Framework



## **2. Literature review**

The researcher mainly applied subject index searching, citation searching and footnote chasing and browsing strategies to search for relevant literature. The researcher first used subject index searching in different search engines to find articles, and then browsed all the results found to select the most relevant studies. EBSCO Host, Educational Resources Information Center (ERIC), Proquest Dissertation and Theses, Springer Link, Google Scholar and China National Knowledge Infrastructure (CNKI) are major search engines were employed. In addition, reference lists and citations of the most relevant articles are also scanned to trace other relevant studies.

### **2.1 The Therapeutic Significance of Music**

Music is considered as an effective tool to heal human in many domains such as physical, psychological, social. Both in psychology and neurology, more and more research and clinical practice focus on music functions and efficacy. Some can found apparent evidence to prove its role, and some not. Since the inception of the National Association for Music Therapy (NAMT) in 1950, music therapy started to be built its systemic theory as a discipline.

#### **2.1.1 Meaning in music**

For the classical Greek philosophical tradition, music was melodic—moved the passions (for good or ill), and was a fundamentally human activity, affecting our emotions by being stirring and martial, or beautiful and enticing. On the other side, music, in the theories erected on the basis of the measurement of aspects of the sounds that comprised it, embodied the natural laws of number and could thus be viewed as reflecting abstract and immanent aspects of the universe such as the principles of natural order, or the workings of the divine (James, 1993).

In the medieval world, music could be thought of as having meaning in at least two domains, the human and the divine (Sparshott and Goehr, 2001). By the later fifteenth century, music came to be seen in part as a foundationally human activity with its values and its meanings requiring to be expressed and interpreted in human rather than divine terms (Palisca, 1985). By the later seventeenth and early eighteenth centuries, music's

meanings had come to be largely theorized in terms of human passions or affects. Music's alignment with rhetoric was foregrounded (Sparshott, 1998), as was the extent to which its forms mirrored those of the linguistic prosody, though the structures that music could articulate also became more important for their own sake.

Through the eighteenth century, music's forms became more and more intelligible in terms of theories of harmony, related to either, and sometimes to both, the findings of physical acoustics, and abstract principles of architectonic structure. By the late eighteenth century, the objects of the meanings of music could be conceived of as private, being in the mind, or as public and social (Cross I., 2009).

At the end of the eighteenth century a new approach of understanding meaning in music was developed by Hume and Kant. The new notion is that music should be valued for its beauty but which sought to detach music's meaning from its social value and to valorize its experience as art as an end in itself. It developed in tandem with the emergence of the notion of music as being autonomous, or as having value in its own right. The ideas that underpin this approach have come to constitute the prevalent means of addressing questions of music's value and significance within the Western intellectual tradition of the last two centuries or so.

In current approaches the notion of the aesthetic is bound up with the notion that there are phenomena that can only be described as 'art', and various attempts have been made to demarcate the qualities that art must have in order to be art (Wollheim, 1980). The identity of art has been variously proposed as lying in its capacity for representation, its structural qualities, or in its capacities for expression. In expression-based approaches, works of art are viewed as the loci for aesthetic experience by virtue of encapsulating both emotional and rational qualities that may be more or less apparent to, or recuperable by, engaged audiences (Davies, 1994).

In summary, the aesthetic view of music's meaning has been predominant for the last two centuries. Other conceptions of the bases for meaning in music have emerged that locate these in the relationship between music and social factors and forces. Many of these theories have been explored in the context of cognitive theories of music although, as we shall see, certain views of musical meaning present considerable obstacles to scientific theorization and investigation (Cross I., 2009).

### 2.1.2 Music function

About the functions of music, there are many conclusions through research. Cross summarized the cross-cultural study of the functions of music reached a peak in the ethnomusicology of the 1950s and 1960s. He thought the most concise and comprehensive summary of this approach can be found in Merriam's *The Anthropology of Music* (1964). Merriam enumerates no fewer than ten principal functions (Merriam, 1964): Emotional expression, Aesthetic enjoyment, Entertainment, Communication, Symbolic representation, Physical response, Enforcing conformity to social norms, Validation of social institutions and religious rituals, Contribution to the continuity and stability of culture, and Contribution to the integration of society.

Based on the functions of music above, music therapy addresses 3 goal areas in order to increase cognitive, motor, social, communicative, musical and emotional functioning in disabled children: (a) educational, (b) rehabilitative, and (c) developmental (Thaut, 1999). Hurt-Thaut summarized four aspects functions music therapy can address for children with special needs as followed (Hurt-Thaut, 2009):

*Motor function:* Musical instruments can provide a specific target for the children to aim towards, defining the parameters of the desired movement. The music therapist uses the music to help facilitate the client's participation while simplifying and readily adapting to the functional level of the child and leads to much more effective interaction with children of all functional levels.

*Communication skills:* Music therapy can play a large role in the development and rehabilitation of both verbal and non-verbal communication skills in children. Developmental Speech and Language Training through Music (DSLTM) is one neurologic music therapy technique which uses developmentally appropriate musical materials and experiences to enhance speech and language development through singing, chanting, playing musical instruments, and combining music, speech and movement.

*Cognitive learning:* Several music therapy interventions are used to address cognitive learning in children in order to aid in memory, attention, and executive function skills. Musical mnemonics can be an organizational tool, using grouping or chunking through melodic and rhythmic patterns to assist in

text recall with children. Many studies have looked at the relationship between music and the performance of autistic children on cognitive tasks.

*Emotional and social development:* Music therapy interventions can provide an effective medium to create rewarding social and emotional experiences for children. In addition to working on physical, sensory, cognitive or speech goals, music can also help to increase self-esteem and provide an outlet for emotional expression through success-oriented experiences at any level of functioning. Music can also be used in a group setting to provide opportunities for peer interaction and support.

### **2.1.3 Music therapy for children with special needs**

#### *For children with autism*

Children with autism always present with apparent limitations of verbal language and non-verbal communication. Music therapy has been recommended as an effective treatment in facilitating communication, as music is a medium that involves a complex range of expressive qualities, dynamic form and dialogue, and offers a means by which some form of alternative communication can be established to help achieve engagement, interaction and relationships (Trevarthen 1999; Wigram 2002a).

It is widely reported that music can make lots of advantages for children with autism. Simpson and Keen in their article reviewed 20 experimental studies which determine the evidence base for the use of music as an intervention for children with autism (Simpson & Keen, 2011). Composed songs and improvisational music therapy were the predominant music techniques used. They also found there was somewhat limited evidence to support the use of music interventions under certain conditions to facilitate social, communicative and behavioral skills in young children with autism. It appears that some individuals with autism may respond to elements of music and more research is required into the efficacy of specific applications of music stimuli. There is preliminary evidence that children with autism may benefit from music interventions within naturalistic settings and further investigation into these types of interventions and the training required to implement them is required (Simpson & Keen, 2011).

Wigram and Gold found that music therapy can provide the framework for the development of learning and adaptability as well as it is most notable in promoting interpersonal communication, reciprocity and the development of relationship-building skills for children with autism (Wigram & Gold, 2006).

*For children with TBI*

Traumatic brain injury (TBI) is one of the common causes of disability in physical, psychological, and social domains. It leads to the impairment in sensory, motor, language, emotional processing and cognitive functions such as attention, information processing, executive functions and memory. Cognitive deficits are considered to play a central role in TBI and contribute significantly to functional recovery (Spitz etc., 2012).

Recently, music therapy have been as a method to alleviate cognitive impairment of children with TBI. The role of music in cognitive rehabilitation is evolving, based on newer findings emerging from the fields of neuromusicology and music cognition. Research findings from these fields have contributed significantly to our understanding of music perception and cognition, and its neural underpinnings (Hegde, 2014). Music-based intervention methods have shown promising results in rehabilitating movement, gait-related problems (Hurt etc., 1998). It has shown positive results in reducing the levels of anxiety, depression, agitation and in inducing stable mood state. Enhanced adaptive behavior following music-based intervention has been observed even during recovery from coma and later in both adult and children population (Hegde,2014). Music-based intervention has led to improvement in speech production and sensory perceptions (Schlaug,2010. Baker,2005). Studies suggest that use of musical intervention facilitates early responsiveness in patients which in turn foster cognitive rehabilitation in the early acute phase following TBI (Bower etc., 2013).

A recent review has examined the scientific work supporting therapeutic effect of music using neurochemical changes as evidence. The authors of this review work compile the evidences in four different domains viz., (a) reward, motivation, and pleasure mediated by dopamine and opioids; (b) stress and arousal mediated by cortisol, corticotropin-releasing hormone (CRH), and adrenocorticotrophic hormone (ACTH); (c) immunity mediated by serotonin and the peptide derivatives of proopiomelanocortin (POMC), alpha-melanocyte-stimulating hormone and beta-endorphin; (d) social

affiliation mediated by oxytocin (Chanda & Levitin, 2013). It is also hypothesized that listening to music facilitates neurogenesis or the regeneration and repair of cerebral nerves by adjusting the secretion of steroid hormones, finally leading to neural plasticity (FukuiH & Toyoshima, 2008).

Hegde summarized that the neuroscientific models of music therapy is based on the principle that, “plasticity” as its veritable nature, brain engages in producing music by indulging an array of cognitive functions and in turn gets restored and altered via music even in the non-musical domains of functioning. In other words, music can stimulate complex cognitive, affective, and sensorimotor processes in the brain that can be generalized and transferred to non-musical therapeutic applications (Hegde, 2014).

*For children with emotional disturbances*

Emotions are “complicated collections of chemical and neural responses, forming a pattern,” they are about the life of an organism, and their role is to assist the organism in maintaining life (Dimitriadis & Smeijsters, 2011). Primary or universal emotions are happiness, sadness, fear, anger, surprise, and disgust. Some examples of the secondary or social emotions are: embarrassment, jealousy, guilt, or pride. Damasio (1999, p. 287) agrees that his notion of background emotions is very close to Stern’s vitality affects. They both refer to a dynamic level of feeling. This dynamic level of feeling can be influenced by parameters like rhythm, tempo, intensity and shape, as described previously. When something has an influence to the background feelings, then this might cause changes in the human psyche (Dimitriadis & Smeijsters, 2011).

Individuals with Disabilities Education Act (IDEA) defines an emotional disturbance as: a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree, which adversely affects educational performance. An inability to learn which cannot be explained by intellectual, sensory, or health factors; An inability to build or maintain satisfactory interpersonal relationships with peers and teachers; Inappropriate types of behavior or feelings under normal circumstances; A general pervasive mood of unhappiness; A tendency to develop physical symptoms or fears associated with personal or school problems .

Music therapy is often considered as an effective intervention for children with social, emotional and behavioral problems. However, Sam etc. found in their research that the

evidence about the efficacy of music therapy for children with social, emotional and behavioral difficulties is not clear cut. That's why they designed a trial to date examining the effect of music therapy on young people experiencing social, emotional or behavioral difficulties and aim to provide empirical evidence for the use of music therapy among this population (Porter et al., 2012).

#### **2.1.4 Summary**

Music is always considered playing an important role in improving social, emotional, physical, psychological difficulties. Although there are a number of researches on this topic, it's apparently that more evidence were need to be found for the exactly functions of music. For children with special needs, the therapeutic significance need to be examined in more clinic practices and studies.

### **2.2 Children with ASD**

According to the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-V, P49; American Psychiatric Association, 2013), Autism Spectrum Disorder (ASD) encompasses disorders previously referred to as early infantile autism, childhood autism, Kanner's autism, high-functioning autism, atypical autism, pervasive developmental disorder not otherwise specified, childhood disintegrative disorder, and Asperger's Disorder.

Autism spectrum disorder is the primary diagnostic consideration for individuals presenting with social communication deficits. Individuals with autism spectrum disorder may only display the restricted/repetitive patterns of behavior, interests, and activities during the early development period, so a comprehensive history should be obtained. Current absence of symptoms would not preclude a diagnosis of autism spectrum disorder, if the restricted interests and repetitive behaviors were present in the past.

#### **2.2.1 Characteristics of Autism Spectrum Disorders**

In 2013, the latest version of the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-V; American Psychiatric Association, 2013) was released, and

in this new version, a single umbrella disorder is used to reflect a continuum model in the diagnosis (Figure 2). The current research adopted the DSM-5 criteria for ASD.

### 2.2.2 Prevalence in American

Autistic disorder is one of the most prevalent exceptionalities of childhood in U.S (Reschke-Hernández, 2011). From 1997 to 2007, the number of children ages 6 through 21 with autism who received services under the Individuals with Disabilities Education Act (IDEA) rose from 42,517 to 258,305 (Data Accountability Center, 2009). According to the report of APA(5th ed.; DSM-V; American Psychiatric Association, 2013), in recent years, reported frequencies for autism spectrum disorder across U.S. and non- U.S. countries have approached 1% of the population, with similar estimates in child and adult samples. It remains unclear whether higher rates reflect an expansion of the diagnostic criteria of DSM-IV to include subthreshold cases, increased awareness, differences in study methodology, or a true increase in the frequency of autism spectrum disorder.

Table 1 DSM-5 Criteria for ASD (Diagnostic criteria)

<p>A. Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following, currently or by history (examples are illustrative, not exhaustive; see text):</p>
<p>1. Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.</p>
<p>2. Deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language, or deficits in understanding and use of gestures; to a total lack of facial expression and nonverbal communication.</p>
<p>3. Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behavior to suit various social contexts, to difficulties in sharing imaginative play or in making friends; to absence of interest in peers.</p>
<p>B. Restricted, repetitive patterns of behavior, interests, or activities, as manifested</p>

by at least two of the following, currently or by history (examples are illustrative, not exhaustive; see text):

1. Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases). 2. Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take same route or eat same food every day).

3. Highly restricted, fixated interests that are abnormal in intensity or focus (e.g., strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interests).

4. Hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).

C. Symptoms must be present in early developmental period (but may not become fully manifest until social demands exceed limited capacities, or may be masked by learned strategies in later life).

D. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

E. These disturbances are not better explained by intellectual disability (intellectual development disorder) or global developmental delay. Intellectual disability and autism spectrum disorder frequently co-occur; to make comorbid diagnoses of autism spectrum disorder and intellectual disability, social communication should be below that expected for general developmental level.

Note: Individuals with a well-established DSM-IV diagnosis of autistic disorder, Asperger's disorder, or pervasive developmental disorder not otherwise specified should be given the diagnosis of autism spectrum disorder. Individuals who have marked deficits in social communication, but whose symptoms do not otherwise meet criteria for autism spectrum disorder, should be evaluated for social (pragmatic) communication disorder.

Specify if:
With or without accompanying intellectual impairment
With or without accompanying language impairment
Associated with a known medical or genetic condition or environmental factor
Associated with another neurodevelopmental, mental, or behavioral disorder
With catatonia

**2.2.3 Prevalence in China**

The results of The Second National Sample Survey on Disability shows that the amount of children with mental disorder (including multiple disorder) has approached 111 thousands which is 1.1% of the population of 0 to 6 years old children. It includes 36.9% of children with ASD, which is 41 thousands children. In addition, the survey indicates that boys with ASD are more popular and the morbidity is irrelevant to the race, territory, and the developmental level of culture and social economy. Another report states that in Haidian district in Beijing there is 16.6% children with ASD in 1145 children with disability of the population of 0 to 16 years old.

**2.3 Practice and research on music therapy for children with ASD**

**2.3.1 History analysis of music therapy treatments for children with ASD**

Reschke-Hernández offers a systematic review of the history of music therapy research and treatment of children with ASD in her paper (Reschke-Hernández, 2011). It includes a history of autism diagnosis, reviews strengths and limitations of music therapy practice with children with ASD from 1940-2009, and gives suggestions about the future research and practice in this area.

***Music therapy for children with Autism: 1940 through 1989***

Reschke-Hernández’s (2011) study states there were no publications documenting music therapy treatment of children with ASD in the 1940s, three music therapy studies of children with autism using comparative measures from 1950-1989, and only one article regarding music therapy and children with autism was published from 1975 until 1982.

In this period, Nordoff and Robins were two important pioneers in improvisational music therapy for children with autism. They believed children with autism saw music as

a non-threatening medium, allowing for them to become engaged in the experience of music making easily (Nordoff & Robbins, 1968).

This is not true, however, of the autistic child; with him it is not so much a question of discovering his musical handicaps as finding what point of contact he might have with music.

Together they developed Creative Music Therapy technique for children with autism. This technique used of child-directed techniques to help establish rapport between patients and therapists. Creative Music Therapy addresses behavior challenges through improvisation as a medium of self-expression. This allows for exploration of sensory sensitivities, like uncomfortableness with loud noises. Speech dynamics, rhythm, singing, dance, movement are all used to address attention, body awareness, social skills, communication (Reschke-Hernandez, 2011).

American authors of the early 1980s impressed the importance of using an interdisciplinary model for success in the treatment of clients with autism and international music therapists focused on the sensory sensitivities of children with autism in music therapy (Reschke-Hernandez, 2011). Reschke-Hernández (2011) summarized with a table that from 1940-89 music therapists attempted a multitude of techniques under very broad goal areas. In this period, most music therapists addressed communication skills and social skills. In an article in the *British Journal of Music Therapy* Alvin says that establishing communication is the primary goal of music therapy with autistic children (Alvin, 1969).

Based on guidelines from the Center for Evidence Based Medicine, the summary of the historical research evidence from 1940-89 shows some primary limitations described as most studies did not adequately describe the techniques for replication and no reviews of research or case studies containing quantitative analysis appeared (Reschke-Hernández, 2011).

### ***Music therapy for children with Autism: 1990 through 2009***

In 1990, Public Law 94-142 was renamed the Individuals with Disabilities Education Act, and the list of conditions was expanded to include autism. Treatment techniques now focused more on therapeutic approaches originating in psychology and special

education (Reschke-Hernandez, 2011). The TEACCH (Treatment in Education of Autistic and Related Communication Handicapped Children) method was applied to music therapy . To do this, music therapists:

- Created individualized activity schedules for each child.

- Incorporated the alternation of preferred and non-preferred activities to help decrease behavioral problems during sessions.

- Used music as a transition technique when moving from one activity to another.

In 1993, the Government Performance and Results Act made it necessary for all federal programs to start clearly identifying their goals and measuring their outcomes. It can be difficult to measure outcomes in a quantifiable way for music therapy in children with Autism, since they could easily be defined as “benefits for people during or after their involvement with a program.” The United Way provides funding for many organizations, including music therapy programs in children with Autism. In 1996, the United Way explained the importance of measuring and reporting outcomes, saying that it shows whether a program actually makes a difference, and helps the program to improve. Before the year 2000, the annual reports of music therapists stated demographic information such as the total number of clients they served, age, gender, ethnicity, and zip-code, rather than an outcomes-based assessment (Kaplan, 2005).

Some research continued to focus on symptoms of autism that are not necessarily related to education, such as sensory perception issues. Music therapists began looking at different timbres and vibrations creating different behavioral responses in relation to sensory perception (Reschke-Hernandez,2011).

In 2004, Public Law 94-142 was revised mandating that the educational techniques used to treat disabled children be evidence based. Because of this, music therapists were pressured to improve the level of evidence to justify how they treat autism. The American Music Therapy Association established the Music Therapy and Autism Task Force/Think Tank in 2007 with the goal of guiding the future of music therapy and autism. It focused on evidence based practice, clinical research models, assessment models (Reschke-Hernandez, 2011).

The goals of music therapy in autism mirrored DSM-IV criteria for autism. The DSM-IV focuses on social behavior and communication in describing autism. Because of this

music therapy shifted focus to social skills, with communication a second focus. Sensory issues are not the current issue of focus in research (Reschke-Hernandez, 2011). In accordance with the DSM-IV criteria, the Social Communication, Emotional Regulation, and Transactional Support (SCERTS) model of curriculum was developed in 2003 by B. M. Prizant. The goal of this model is to identify treatment goals and assess their outcomes. Music therapists would benefit from this model with three reasons. Firstly, the SCERTS model makes experimental research easier, as it provides a uniformed way of assessing goals and outcomes allows for multiple site studies to be done. Secondly, since the SCERTS model makes it easier to conduct studies, music therapists have the opportunity to prove the effectiveness of their treatments. Finally, since the SCERTS model is used by an interdisciplinary team, it allows for music therapists to better communicate with the other individuals involved with the Autistic child's treatment plan (DeLoach Walworth, 2007).

### **2.3.2 Newest development of music therapy for children with ASD**

Studies in music therapy for children with ASD of the newest development of this period are focused on improving emotional understanding, a crucial part of social interaction (Reschke-Hernandez, 2011). Since repetition is an important element in the life of a person with Autism, treatment interventions that are repeated in a predictable pattern are most effective. Therefore, most twenty-first century studies of music therapy and children with ASD incorporate repeated exposure to music therapy. Wigram and Gold found that music therapy can provide the framework for the development of learning and adaptability as well as it is most notable in promoting interpersonal communication, reciprocity and the development of relationship-building skills for children with autism (Wigram & Gold, 2006). Katagiri (2009) conducted a study investigating the effect of background music on teaching children with Autism how to better understand emotions. All of the children in the study showed significant improvements in their understanding of happiness, sadness, anger, and fear after listening to background music representing the specific emotion in question. The study suggests that listening to music may be a helpful resource for better understanding emotions for children with Autism (Katagiri, 2009). It is also interesting to compare the effects of music therapy with other forms of therapy.

In a 2010 study, Lim looked at speech production in children with Autism after receiving either music training or speech training. The results showed that all of the children benefited from both forms of therapy as demonstrated through improved verbal skills. However, the low-functioning children with Autism showed significantly larger improvements with music training than with speech training (Lim, 2010). Another study showed that speech production in children with Autism could be improved by incorporating music into ABA VB, or Applied Behavioral Analysis Verbal Behavior training (Lim & Draper, 2011).

Some intervention techniques that have recently developed and are currently evolving include family based therapy, prescriptive songs, music therapy tools to use outside of sessions, and the Music Hut, a musical playground to encourage outdoor play with other children (Reschke-Hernandez, 2011).

A study of the investigation of the impacts of Family-centred music therapy (FCMT) on social engagement abilities involves twenty-three children (36-60 months) with severe ASD received either 16 weeks of FCMT. Change in social engagement was measured with standardized parent-report assessments, parent interviews and clinician observation. The results of this study shows that FCMT improves social interactions in the home and community and the parent-child relationship, but not language skills or general social responsiveness (Thompson, McFerran, & Gold, 2014).

One study focused on an improvisational music therapy approach in an intersubjective theoretical perspective. This study presents an example analysis about the coding of some music therapy's sessions of a clinical case of infantile autism by using a coding scheme made to evaluate the music therapeutic process. The results shows the *Music Therapy Coding Scheme* (MTCS) is a specific descriptive and quantitative instrument, useful to detect the changes in the music therapeutic process. In addition, researchers believes that the development of those sonorous-musical and relational indexes during the treatment can show the potential therapeutic results reached through the music therapeutic treatment(Oasi, Raglio, & Traficante, 2011).

Another study explored treatment guidelines based on the most important common characteristics of improvisational music therapy (IMT) with children with ASD (Geretsegger et al., 2015). It includes a survey among music therapy professionals in 10

countries and focus group workshops with experienced clinicians in 3 countries and a treatment fidelity assessment used to rate therapy excerpts. The results of this study corroborated most of the initial principles of IMT and other unique and essential principles for children with ASD. An international consensus about core principles of improvisational approaches in music therapy for children with ASD was offered to assess treatment fidelity. It could be applied to prompt future research and practice.

## **2.4 Group Music therapy for children with special needs**

Although clinicians such as Nodrdoff and Robbins have done a great deal of groupwork since the 1970s, the literature regarding the theories and practices of group music therapy for children with special needs is still limited.

### **2.4.1 Group development Stages**

The literature about strategies for inviting and promoting group process in the children's music therapy group is scant (Goodman, 2005, pp.209). Friendlander (1994) terms four group development stages: 1) preaffiliation; 2) power and control; 3) intimacy; 4) differentiation and separation. She describes the first three as they manifest themselves in the music therapy group. Preaffiliation is marked by approach-avoidance behavior where the child explores the use of musical materials and must have enough ego strength to avoid open conflict and hostility. Power and control involve challenging the authority of the therapist and competing for attention, both verbally and nonverbally through the music. Intimacy, after several weeks of intensive work, relies on familiarity, structure and music to help members work toward a common musical goal as they listen to and support each other (Goodman, 2007). These stages, along with the stage of separation-individuation (Garland et al., 1976) are also discussed by Hibben (1991) with the suggestion that demands of the groupwork increase as the children gain the ability to share, become intimate and assume greater responsibility.

### **2.4.2 Practice and research on group music therapy for children with ASD**

It is widely reported that music can make lots of advantages for children with autism. Simpson and Keen in their article reviewed 20 experimental studies which determine the evidence base for the use of music as an intervention for children with autism (Simpson

& Keen, 2011). There only one research on sensory needs of the autistic child with group music therapy (Nelson, Anderson, Gonzales, 1984). Composed songs and improvisational music therapy were the predominant music techniques used. Nordoff & Robbins (1968) conducted a pilot music therapy project with 26 children. This study showed there were six children clearly showed musical sensitivity, although this tended to remain limited or stereotyped. Four children possessed a genuine musical intelligence, present in what might be called a normal state of development and function. The fact that two of these freely musically sensitive children began music therapy in the severely autistic condition was of immense importance in the subsequent development of musical rating scales. The *British Journal of Music therapy* published in 1989 the first article regarding an improvisational music therapy group approach for children with autism (Bryan, 1989). Bryan provided minimal guidance and observed the group evolve through rhythmic and vocal imitation, reciprocal musical conversations, and exploration of cause and effect. Stewart (2002) writes about the changing relatedness or attunement of the autistic child through musical improvisation in music therapy group.

Since group music therapy has been widely practiced for many years, the book *Music Therapy and Group Work* brings together the experiences of group music therapy practitioners who work with diverse client groups in various settings and combines clinical examples with theory to provide a comprehensive introduction to group music therapy. Chapters discuss work with children, adolescents, and adults of all ages, showing the wide range of applications for group music therapy: in assessment for clinical diagnosis; in work with clients who have learning disabilities, special educational needs, eating disorders or autistic spectrum disorders; and in neurological rehabilitation. Editors emphasize that this field needs to develop some further theoretical discourse of its own, primarily because its main contrast from regular group work is that it draws on a non-verbal medium alongside the ordinary verbal exchange (Davies & Richards, 2002).

Active interventions that include family involvement are demonstrated to bring about positive changes. Allgood's study examined parents' perceptions of a 7-week family-based group music therapy intervention. Data were collected through pre-interview sessions with the parents and post-intervention focus group. Parents reported positive responses to the intervention and were able to articulate new insights about themselves

and their children (Allgood, 2005).

The newest study report of group music therapy for children with ASD was to examine the effects of a music therapy group intervention on eye gaze, joint attention, and communication in children with ASD. This study involves 17 children, ages 6 to 9, with a diagnosis of ASD were randomly assigned to the music therapy group (MTG) or the no-music social skills group (SSG). The results of this study support further research on the use of music therapy group interventions for social skills in children with ASD. Statistical results demonstrate initial support for the use of music therapy social groups to develop joint attention (LaGasse, 2014).

Music therapy interventions are effective in improving the social interaction and communication skills of adolescents with ASD. Eren's one case study shows that adolescents initiated and sustained social interactions during music sessions and less resistance could be observed while interacting with their peers. The simulation of real life experiences within the safety of the music therapy sessions help adolescents with ASD to understand how social interaction and communication occurs in real life. The music therapy group provided an opportunity for adolescents with ASD to attempt social interactions in a safe environment where they would not be judged because of their incorrect actions. They had the chance to change their ways of interacting. The musical environment gave them the chance to experience real life situations in an indirect, safe and nonjudgmental setting (Eren, 2015).

#### **2.4.3 Music therapy approaches and strategies of working with the ASD**

Children with ASD have unique sensory profiles, which requires assessment to “ensure that treatment in a group can comfortably address the various functioning levels and physical problems that could arise as a result of group encounters” (Berger, 2002, pp. 172). The functioning levels determines the music therapy activity levels which should use age-appropriate methodology.

Relationship-based approach: The primary relationship-based approach used with autistic children in group music therapy is that of Nordoff-Robbins. In this approach, as the child progresses in musical and interpersonal relatedness, he/she is able to become part of a group. Since the autistic child may not have the internal capacity to self-

structure, the musical experiences that are improvisational must deliver the sense of structure (Goodman, 2007, pp.194).

Activity Choices: There is numerous mention of ongoing group work with different populations within special education as well as related strategies (Adamek and Darrow, 2005). Goodman summarized six music therapy activity choices from Adamek and Darrow's study as follows (Goodman, 2007, pp.194):

- Address communication skills as follows: 1) options for choices through instrumental and vocal activities; 2) vocal imitation in songs; and 3) following directions (i.e., stop/go).

- Address social skills as follows: 1) turn-taking and sharing; 2) cooperative music-making as part of an ensemble; 3) self-expression through song, instruments and movement; and 4) self-esteem achieved through mastery of new skills.

- Address changes in behavior as follows: 1) follow directions in music; 2) leadership as well as following roles; and 3) reinforcement of appropriate behavior through the music.

- Promote academic skills as follows: 1) counting songs as well as rhythm activities; 2) movement activity that reinforces directional concepts; and 3) categorizing instruments through the use of colors, size, shapes and sounds.

- Developing physical skills as follows: 1) fine motor skills addressed through the playing of specific instruments; and 2) gait training through patterned music.

- Developing interest in leisure skills: 1) training on instruments such as guitar or piano; and 2) vocal ensemble rehearsal for performance options.

In summary, some key music therapy suggestions for working with the autistic child include (Goodman, 2007, pp.194-195):

- Consider a relationship-based approach where the emphasis is on musical relatedness and interpersonal relatedness and structured within the musical experience.

- Provide a clear format for the music therapy session, encouraging the children to choose the materials they would like to work with.

- Encourage variety rather than rote repetition of music activity.
- Be sure to use song transitions or simple words to transition from one activity to another.
- Be responsive to echolalic or perseverative speech/language by extending it further in order to discourage the echolalic or perseverative speech/language.
- Break down the presentation of music activities, presenting one step at a time, simplifying as necessary and providing modeling and prompting.
- Encourage shared communication and natural eye contact amongst the children by turn taking types of instrumental, movement and vocal activities.
- Take advantage of spontaneous nonverbal or verbal communication of the children in order to form further musical and interpersonal connections.

## **2.5 Music therapy in China**

Music therapy started to develop as an independent discipline in China since 1989, although the idea of music therapy existed in ancient China before more than 2,000 years. CMTA (Chinese Music Therapy Association) has around 600 individual members and 150 collective members, and holds an academic conference every two years. During these 25 years, there are a large number of achievements which have been made by researchers and clinical practitioners. The topics, which were mainly focused on the history and theories of music therapy, have been shifted to practical and clinical areas.

### **2.5.1 Traditional Chinese music therapy Method**

#### ***Five-element and five-note therapeutic method***

In ancient times, Chinese people had profound knowledge of the relationship among music, emotion and viscera, which is known as the theory of the five notes, five elements and five internal organs. The five notes are Gong (do), Shang (re), Jiao (mi), Zhi (sol), and Yu (la) of the pentatonic mode. The universe consists of five elements which are gold, wood, water, fire and soil in Chinese ancient philosophy theory. In the earliest Chinese medical book Huangdi Neijing, the relationship among of the five elements, the five notes and five kind of viscera was described as “the nature of Jiao (mi) is wood which was related to the liver, the nature of Zhi (sol) is fire which was related to the heart, the

nature of Gong (do) is soil which was related to the spleen, the nature of Yu (la) is water which was related to the kidney”. These theories which contain the relationship among music, physiology and pathology constituted the basis of Chinese music therapy method.

### ***Musical Electro-therapy***

Musical electro-therapy is a kind of Chinese original music therapy method which combines music, electro-therapy, acupuncture and moxibustion. Its principle is to convert the music signal into electrical signal acting on the body to enhance the treatment effect. This method is widely used in the treatment of muscle torsion injuries, facial paralysis, sciatica, neurasthenia and other diseases (Ma etc., 2006).

### **2.5.2 Clinical research**

In ancient Chinese books, there are a few successful clinical practices recorded. In the last 20 years, clinical research of the five-element and five-note therapeutic method and musical electro-therapy mainly includes: Xiang verified that the combination of five elements and five notes therapeutic method and musical electro-therapy has good effect on patients with malignant tumor depression (Xiang etc., 2006). In Zhang’s case, the effect of dialectical therapy combined with the five-element music therapy and electro-therapy on acupuncture point was significant for patients with type II diabetes mellitus (Zhang, 2006). Through observation of the variation of the electric current value, Zhou found the listening of the music of Gong mode and Yu mode effectively slow down the stress (Zhou, 2001). In his 10 years of clinical trials and research, Yang found that the application of five-element musical therapy can significantly alleviate the depression and clinical symptoms in patients with malignant tumor (Yang, 2008).

### **2.5.3 Chinese Practical study with western music therapy method**

#### ***Clinical Research of Physiology and Psychology***

In China, western music therapy methods were mainly applied to healing, health care and pressure reduction.

Chen compared the effects of music and subliminal information on 207 termers’s anxiety, depression, and cognition, and concludes that “music effectively reduces the anxiety of termers” (Chen, 2010). Xie and others’ study was on the autonomic nerve

physiology reaction under the influence of different music. This research provides the scientific basis of the therapeutic functions of music (Xie, 2009). Lu confirmed the application of music therapy in the stressful environment of ICU can alleviate the excessive tension of sympathetic nerve, calm down mood and feelings, relieve the stress response, as well as reduce and prevent the ICU syndrome. She also suggests that compared with short-term intervention, long-term intervention of music therapy has more significant effect (Lu, 2008).

It was found that with the increased time of listening to music, the level of relaxation of patients was increased (Wang, etc., 2002). In addition, there are others clinical studies about applying music therapy to treat negative emotions such as depression, anxiety, and nervousness that emerge during patients' treatment process (Huang, 2008) (Chen, 2008) (Deng, 2008).

For pregnant women, Fan confirmed that music played a role in reducing maternal anxiety (Fan, 2007). Basically same with the result of Zhou's research, it's evident that moderate anxiety of pregnant women would decline after music therapy (Zhou, etc., 2008).

### ***Music therapy for children with special needs***

Jin and others constructed the visible music therapy system for children with special needs. The theoretical basis of the system, material treatment, site settings, treatment process, principles and effect are discussed in their study. They conclude through the application of their system that the visible music therapy is an important method of mental and behavior intervention for special children, which is of theoretical significance as well as practical value for the rehabilitation of special children (Jin, 2008).

For children with intellectual disabilities, Ning did a study which confirmed that Orff music therapy could improve the work memory and attention of children with Down's syndrome, and the improvement is possibly due to the reasonable design of Orff music activities (Ning, 2010). The result of Zhang's study stated that music therapy is an effective method to improve the intellectual level and social adaptability of children with intellectual disabilities (Zhang, 2004). Yao concluded that therapeutic music experience could be organized to help children with intellectual disabilities increase correct behavior, concentrate, follow instructions and keep eye contact. She also mentioned that music

activity could help the development of motor skills, learning ability, as well as language capabilities (Yao, 2007).

For children with autism, Chen discussed the effect of intervention of music therapy for them. In her study, 30 children with autism were randomly divided into experiment group and control group. Both groups received comprehensive treatment combined with medicine and education. Experiment group received music therapy. Both groups received ABC and PEP assessment before and after therapy. Compared with the scores of control group, the scores of experiment group was significantly different in emotion and behavior, especially extremely different in emotion. But the difference between two groups in feeling response and interaction was not significant. Among comprehensive intervention on children with autism, the clinical effect of music therapy for emotion and behavior improvement is significant (Chen, 2010).

Zhang suggested that the re-creative experience should be the core in music therapy for children with autism (Zhang, 2006). In Shi's study on five children with autism with recreation music therapy method, after 18 times of individual therapy and 18 times of group therapy, the experimental results show that the subjects' perception, communication, language and motor ability were improved significantly (Shi & Huang, 2011).

In Chen's study, he used clinical improvisation technology as target, referring to existing English documentation, and worked out the concept, theory basis, technical key point, and evaluation method of clinical improvisation technology. Based on the video of real Nordoff-Robbins music therapy, he analyzed and explained the usage of clinical improvisation. In addition to 3-year clinical therapy practice, he stated the clinical improvisation technology further, and raised some questions and corresponding solutions (Chen, 2008).

#### **2.5.4. Conclusion**

Until today, quantitative research is dominant compared with qualitative research. In the future research, it is very important to reveal special phenomenon and find solutions through new points of view. The methodology should be diverse with the approach of combining quantity and quality research (Du, 2011). The theoretical and clinical research, as well as the research and practice of the five-element music therapy method, still need

to be improved (Ma, 2010; Du, 2011). On the other hand, it was stated the lack of professionals was a crucial problem impeding the development of music therapy in China. In-service clinicians and educators still need to improve their professional skills (Ma, 2010). In addition, the resources of music therapy for children with special needs are still very limited and lack influential theoretical outcome. The quantitative and qualitative studies are staying at low level. It was realized and suggested that music therapy should be applied to the rehabilitation of children with special needs in the future.

## **2.6 Impacts of Inclusion on Music Education for Children with Special Educational Needs**

After the Second World War, the education for children with special educational needs experienced the Normalization movement in Northern Europe, the Integrated Education in Western Europe, the Mainstreaming Education and Regular Education Initiative in USA. Since the publication of UNESCO's Salamanca Statement, inclusive education movement has been endorsed internationally for the last two decades.

Inclusion and participation are essential to human dignity and to the enjoyment and exercise of human rights. Within the field of education, this is reflected in the development of strategies that seek to bring about a genuine equalization of opportunity. Experience in many countries demonstrates that the integration of children and youth with special educational needs is best achieved within inclusive schools that serve all children within a community (UNESCO, 1994).

It impacts all educational practices for children with special educational needs. For schools, this means that teachers now face a wider range of learners and a greater responsibility to diversify their instruction (Abramo, 2012). For music teachers, they also have a responsibility to adapt their traditional teaching methods and materials. In the last two decades, enormous research on the principles and practices relating to the inclusive education has been completed. For example, Salvador identified and described common features or approaches of successfully integrated general music, instrumental, and choral programs and summarize these findings specifically with regard to their utility in school

and community choral settings, with the aim of illustrating how choral directors might better include singers with special needs in their choirs (Salvador, 2013).

### **2.6.1 Music education in inclusive classroom**

#### *Using various teaching methods*

Music teachers can offer successful experience for these students by giving clear, simple directions, using consistent classroom management, and wording directions positively. Music educators and therapists Mary S. Adamek and Alice-Ann Darrow, for example, say, “Asking students to do something is a more positive approach than telling them don’t do something—‘Watch me’ instead of ‘Don’t bury your head in the music’”(Adamek and Darrow, 2010).

Similarly, music educators Alice M. Hammel and Ryan M. Hourigan suggest that for students with learning disabilities, teachers can make accommodations by attending to the modality, pacing, size, and color of the instruction and materials. They recommend that teachers use all modes—kinesthetic, visual, aural, tactile, and so on—when introducing new material, slow instruction down, enlarge music and other materials, and use different colors to help students’ process information (Hammel and Hourigan).

Some suggestions were made by Abromo about the “People-first language”. He illustrated how it was applied to music teaching. He gave a figure about *Some Examples of People-First Language* which I think it can be applied by not only music teachers but every teacher.

#### *Find appropriate resources*

Abramo showed a figure about *Resources for Educators Seeking to Adapt Musical Instruments and Make Other Accommodations for Students* in his article (Abramo, 2012). It could help music teachers to find new instruments and techniques for special students to enable them have a new repertoire.

He also suggests that music teachers can modify their instruction in notation to accommodate students with disabilities. Teachers can register for a free online course to learn the basics of braille notation at <http://www.brl.org/index.html> and can download free software to translate standard notation into Braille at <http://delysid.org/freedots.html>(Abramo, 2012).

In addition, Fitzgerald offered the information found on the Internet for teachers and parents who work with students with disabilities, such as Autism and PDD Support Network. "Tips for Working with Teachers." [www.autism-pdd.net](http://www.autism-pdd.net), Council for Exceptional Children site, with information about many different types of learning disabilities, [www.cec.sped.org](http://www.cec.sped.org), LD Online site, with information, tips, lists, and definitions for parents, teachers, and other professionals, [www.ldonline.org](http://www.ldonline.org). (Fitzgerald, 2006).

With the development of inclusive education throughout the world, many books and research reports are published. The *Music in Special Education* is one of the most important for music teachers, which includes updates on special education law, inclusion principles and practices, teaching strategies, and chapters focusing on students with behavior disorders, cognitive disabilities, communication disabilities, vision loss, hearing loss, and physical disabilities. Music educators and music therapists who work with students with mild or moderate disabilities in typical K-12 schools will find this book most helpful. It gives solid recommendations for successful inclusion of students with a variety of disabilities (McCord, 2006).

*Cooperate with special educators and children's parents*

On the way to successful inclusion, music teachers must collaborate with other educators, administrators, and parents of children with special needs. Nordlund discusses the implications of inclusion in education for the study and teaching of music. Regardless of interpretation, inclusion is labor-intensive and must receive administrative support and schoolwide cooperation in order to work, that is, ensuring learning success for all students as well as meeting individual needs (Nordlund, 2006). *Music in Special Education* also includes excellent strategies for collaborating with special educators and music therapists. Collaboration is an often-overlooked key to successful inclusion (Adamek and Darrow, 2010).

In the research by McCord and Watts, it presents information on how music teachers and special educators can help students with disabilities. The best resource for a music teacher is the special educator in his school and the information in each students' IEP including two part of *Curriculum Access: Universal Design for Learning* and *Learning*

*for All*. It was illustrated how teachers can use the principles of Universal Design for Learning (UDL) to help all students learn (McCord & Watts, 2006).

With the increased number of students with disabilities, music teachers also need to realize that the communication with the parent of these kinds of students is another crucial work. Fitzgerald presented information on how to build a bridge between the music educator and the parent of a student with a disability to achieve success. He summarized some strategies such as contacting the student's parents to introduce yourself, the KISS Method for communicating with parents, showing parents your care about the student, always sharing something positive, and a few words on fairness and students with disabilities. And he also showed some questions for the first conference with a parent and other resources about students with a disability (Fitzgerald, 2006).

### **2.6.2 Music teacher education**

With the increased number of students with special needs in music classes, the inclusive education requires music teachers to understand the students' needs, adapt instruction, and seek help from other professionals. Music teacher educators must begin to incorporate the topic "Zero Reject" within the framework of methods classes and provide expanded opportunities for professional development in this area for in-service music teachers (York and Reynolds 1996). Such efforts will enable music teachers to feel more prepared to teach children with special needs in an included or self-contained classroom (Hammel & Hourigan, 2011). In music teacher education, it should enable music teachers:

- To follow protocols and seek help from trained professionals within a school district;

- To be educated about the general characteristics of specific disabilities (e.g., if there are several students with autism, learn about typical behaviors and characteristics of children with autism) (Adamek and Darrow, 2010);

- To design intervention strategies and classroom accommodations to support the student's learning in music class. Use music that is age appropriate and music activities with which the student can be successful (Adamek and Darrow, 2010).

- To attend the IEP planning meeting; This will enable music teacher to be in contact with special educators, therapists, and social workers who can assist with challenges that arise in the music classroom. Hammel and Hourigan suggest music educators must

encourage collegiality to strengthen the support system around our music students with special needs. This collegiality includes advocating for access to information that will assist music teachers in instructing students with special needs and sharing information with everyone in the educational community (Hammel & Hourigan, 2011).

To be aware that there is a difference between LRE (Least Restrictive Environment) in theory and in practice; This challenge is why music educators must advocate for the appropriate placement of a child with special needs. This may mean adjustments to the child's schedule, the class size (and arrangement), or the types of support a child needs to be successful (along with the other children) in a music classroom (Webber 1997).

Hammel & Hourigan emphasize it is important that the basic framework of special education be included and embedded into our methods instruction (for preservice music educators) and professional development (for in-service music educators) to help arts educators understand their role in the education of children with special needs. It is critical that music educators are aware of current issues in both general and special education, as well as how these relatively global issues affect their daily teaching (Hammel & Hourigan, 2011).

In addition, in Russell-Bowie's research, he reports the findings of a study involving 138 NSW preservice generalist teachers and compares them with similar findings from a similar group of students from a previous study. Finally, he suggests that to empower and encourage preservice teachers to develop their personal confidence and competence in music is a current and daunting challenge facing music educators and must be backed up by universities providing more time and priority for music education in teacher education courses. It must be ensured that primary teachers are given more opportunities to be effectively trained prior to becoming full time teachers (Russell-Bowie, 2010).

### **2.6.3 Conclusion**

By going outside the music education profession, we can find many tried-and-true strategies that will also be useful in music classrooms. Above all, having a consistent approach among teachers for individual students with special needs will enable all students to learn, and successful instructional strategies are not out of reach (Nordlund, 2006).

Although inclusive education practice was not easy to implement, it is exactly the reality and the future of education. Music education should be prepared to play an important role in inclusive education.

## **2.7 A related investigation: Current situation of the implementation of music education and therapy for children with special needs in selected regions of Czech Republic and China**

### **2.7.1 Background**

In China, music education plays its particular role in special education. Based on recent research, music education of special schools has not only some improvements but also problems. In Hunan province and Zhejiang province of China, the problems founded by researchers were as followed: The music teachers are lack of the education background of special education; There are less spaces for music activities; Students like to spend more time on music course (Li, 2006); There are insufficient fund of special education; less professional music teachers for special education; insignificant effects of teaching (Cheng, 2008). In Czech Republic, in the last decade, a variety of strategies have been initiated in an attempt to improve the quality of life for all people with special needs. Representative efforts include a policy of normalization, the integration of students with special needs into regular classrooms and new models for special educators' training (Gargiulo, 1997).

### **2.7.2 Objective**

This investigation is designed to be beneficial for us to improve the practice of teaching and treatment which is in selected regions in the Czech Republic and China. The goals are to describe the practical circumstances of music education and music therapy in selected special schools of Czech Republic and China; compare their outcomes and challenges as well.

### **2.7.3 Method**

It was designed to be a case study of qualitative research. The survey samplings are anonymous. It is sure about there are nothing in the interviews and questionnaires relate to the interests of people who were interviewed and the schools.

#### *Participant*

The samplings based on not only the quantity of the students the special school has, but also the economic development level of the districts which the school locates. It supposed to include around 8 special schools and 80% of their music teachers and therapists

#### *Data analysis Procedure*

Case study of qualitative research: choose the samplings; collect relevant status and issues through interview, questionnaire, and literature; analyze the data with SPSS software; describe the result and analyze the cause.

### **2.7.4 Result of Questionnaires of educators and therapists**

In China, interviews of 8 special school were completed, and 16 questionnaires were took back from 7 special school. In Czech republic, 3 music activities recordings of institutions and 7 questionnaires were collected.

#### *Basic personal information of respondents*

In 23 respondents of questionnaire, there is only one male respondent. The investigation shows is obvious that the largest proportion of the major of music educators in China is preschool education. In addition, the degree level of respondents of Czech Republic is significantly higher than that in China. The proportion of full-time work form is 80% in China. It is higher than that in Czech Republic.

#### *Information of students or clients faced by respondents*

It is almost the same amount of students or clients faced by respondents in every music activity in these two country (Table 3). The similar part of the classification of students or clients are autism, mental retardation, physical disability and learning disability.

#### *Resource of music activities*

The Amount of hours of music activity per week in Czech Republic is a little more than that in China. Instead of using of improvisation and composition method popularly in Czech Republic, respondents practice mainly the Orff method and receptive method in music activities in China. Respondents in two regions are both use music instruments and CD in music activities. In addition, they both have the advantage of sufficient work experience and the lack of research ability.

### *Profession development of respondents*

Although most of respondents agree that research plays an important role to improve the practice, the average amount of research projects in which every respondent was involved per year is only 0.38 in China and 0.86 in Czech Republic. Comparing with the amount of seminars in which respondents were involved per year in two regions, respondents of China participant more internal seminars and less external seminars. As to the effective way to improve practice, most respondents in China thought that visiting other professional institutions had very limited influence, and respondents in Czech Republic reported that long term study did not bring about great improvement as well.

### *Respondents' self-evaluation and perceptions on their work*

Respondents reported the top two favorite experience of their students in music activities were re-creative and appreciation experience in China instead of appreciation and improvisatory experience in Czech Republic. Beyond 85% respondents in Czech Republic thought that music activities had significant effects on the improvement of behavior, physical, interpersonal relationship and music skills. Respondents from China reported the most important effect of music activities was on the improvement of emotion.

In China, respondents reported that primary situation they faced were the lack of professionals, appropriate teaching material and equipment. In Czech Republic, respondents had similar situation with the lack of equipment, space and the experts' supervision.

## **2.7.5 Results of interviews and observations**

### *Interviews*

According to the interview recordings of 8 Chinese special institution, the general situation are as followed:

The average amount of students is 65. The age range is mainly from 7 to 17. The top three classifications are mental retardation, autism and traumatic brain injury. The average rate of student to educator is 2.7:1 and almost 90% of educators are full-time employees. Every institution has specific schedule for music activities in every week and there are several performance events in every semester such as celebration of festival and

concert. Most of these special institutions have no specific room for music activities but the normal classroom. There are limited instruments and music material in these institutions.

### *Observation*

Summary of interview and observation recordings from 3 special institutions in Czech Republic:

a. A kindergarten for children with special needs

There is 15 children from 3 to 7 years old and 6 full time educators. The music therapist is a part-time employee. She has music therapy sessions for 8 children every week. The therapist made individual plan for every clients with other educators and children's parents. Except 30 minutes of music therapy, music activities exist in the daily activities.

b. Two groups in special school A

The first group has 5 children with severe multiple impairment. The second group has 4 children from 11 to 19 years old. Various instruments were applied to receptive experience. In the process of therapy, it's significant that children like the music more than words.

c. Three group in special school B

In the first group, there are 10 children around 5 years old and 4 assistant educators. These children are with visual disability and mental retarded. The therapist lead children to sing and dance during the treatment. The music and movement focus on the development of children's cognition and sense. It's very obvious that children are happy and interest in these activities. The second group has 6 children from 14 to 18 years old. They are with autism and Down syndrome. The third group has 3 children with visual disability who are around 12 years old. The Swedish FMT-method is applied to the treatment. The FMT-method is a non-traditional method of music therapy. It is a method involving individual care and non-verbal communication with the patient. The method helps to stimulate logical thinking of the patient.

## **2.7.6 Discussion**

Due to the limited samplings and recordings, it merely indicate partial situation of special institutions in China and Czech Republic. Nonetheless, there are a few results can be found. It reminds us to discover more paths to improve our practice for children with special needs.

The results of this investigation indicate that the lack of music therapy professionals is the primary problem in Chinese respondent institutions. In 8 respondents of special institutions, there are only 3 music therapists in 2 institutions. The other 5 institutions have no music therapeutic activities. Although there are plenty of music educational activities, limited musical professionals is obvious. There are only 3 respondents whose major is music education in 16 respondents. The largest proportion of respondents' educational background is preschool education. These music educators have no special educational background. They normally learn more about special education while they worked (Li, 2006). In addition, the proportion of bachelor degree and above which respondents have in China is 62.5%. It's less than 85.7% in Czech Republic. Further, these music educators in China are used to apply the Orff music method and appreciation method in music activities. As to improvisatory method and composition method, it need advanced professional skills which are not easy to master by Chinese respondents.

Secondly, due to the diversity of children in special institutions, respondents both in China and Czech Republic are aware of the lack of music resource. They feel hard to find appropriate material for various children with special needs. In Zhejiang Province, the researcher found the similar situation that the pertinence of teaching material educators had were limited (Cheng, 2008).

Finally, the role of music therapy are not realized clearly both in China and Czech Republic. The absence of music therapist in Chinese special institutions already mentioned above. Although there are several music therapists in special institutions in Czech Republic, 42.9% of these therapists are part-time employees. Respondents suggested strongly that music therapy should be the regular part in special education. The specific role of music on improvement for children with special needs should be acknowledged widely (Cheng, 2008).

### **2.7.7 Prospect**

Because the lack of professionals was a crucial problem impeding the development of music therapy, it must be considered not only to employ more music educator and therapist but also to improve professional skills of in-service clinicians and educators (Ma, 2010). In addition, the resources of music therapy for children with special needs are still very limited. There are two paths supposed to solve this problem: one is to encourage educators and therapist implement more action research and case study with the professional supervision; the other is to establish a source center by professionals and experts in certain region to support the practice and research.

### 3. Method

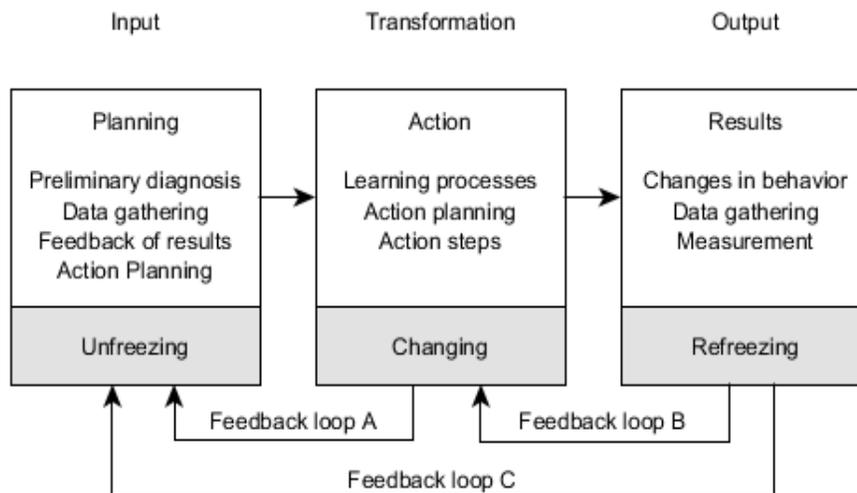
#### 3.1 Mixed Methods

Mixed methods research provided a unique opportunity to strengthen the basis of music therapy evidence (Bradt et al., 2013). The basic goal of the mixed methods was to solve a given research problem from any relevant perspective, using appropriate previous research and / or more than one survey perspective.

#### *Action research*

Action research was an interactive inquiry process that balanced problem-solving actions implemented in a collaborative context with data-driven collaborative analysis or research to understand underlying causes enabling predictions about personal and organizational change (Reason & Bradbury, 2001) in the future. Denscombe (2009, p. 6) wrote that the action research strategy's purpose was to solve a particular problem and to produce guidelines for best practice. Action research was depicted as a cyclical process of change. Lewin's (1958) description of the process of change involves three steps (Figure 3).

Figure 2 Steps and Processes Involved in Planned Change through Action Research



The underlying principles of action research were described as: (1) grounded in lived experience, (2) developed in partnership, (3) addressed significant problems, (4) worked, rather than simply studied with people, and (5) developed new ways of seeing/theorizing

the world (Bradbury & Reason, 2003). After six years of action research development, many methods have evolved that adjust the balance to focus more on the actions taken or more on the research that results from the reflective understanding of the actions (McNiff & Whitehead, 2011). "Knowledge is always gained through action and for action. From this point of view, question the validity of social knowledge rather than how to develop a reflective science about action, but how to develop genuinely well-informed action – how to conduct an action science" (Torbert, 1981). The action research method was employed in this research to demonstrate the effective practical model of group music therapy for children with ASD.

### ***Single-subject research***

Single-subject research is most commonly used in applied fields of psychology, education, and human behavior in which the subject serves as his/her own control, rather than use another individual/group. It's used primarily to evaluate the effect of a variety of interventions in applied research (Kazdin, 1982, pp. 191). Single-subject designs were preferred because they were highly flexible and highlighting individual differences in response to intervention effects (Thompson, 1986). In general, single-subject designs have been shown to reduce interpretation bias for counselors when did therapy (Moran & Tai, 2001). Principal methods in this type of research are: A-B-A-B designs, Multi-element designs, Multiple Baseline designs, Repeated Acquisition designs, Brief Experimental designs and Combined designs (Kennedy, 2005).

In this research, an AB design was used to demonstrate the effect of the intervention. There is a two-phase design composed of a baseline ("A" phase) with no change, and an intervention ("B") phase. The "A" phase called baseline is one in which the researcher collects data on the dependent variable without any intervention in place. The "B" phase called intervention is one in which the researcher introduces an independent variable (the intervention) and then collects the data of the dependent variable.

## **3.2 Participants**

There were six types of participants in this research as followed:

### ***Researcher***

The researcher's duty were to :

Design and implement research plan;

Formulate the group music therapy sessions with therapist;

Organize measurements before and after interventions;

Conclude the effects of interventions.

### ***Music therapist***

The therapist's duty were to :

Formulate the group music therapy sessions with researcher;

Implement group music therapy sessions;

Evaluate sessions during the whole intervention phase.

### ***Assistant***

The assistant's duty were to :

Participate every session to assist therapist and researcher in observing and evaluating.

### ***A group of children with ASD***

This group was composed of five children with ASD. Their ages were from 7.5 years to 9.5 years. They were treated as group members in every session.

### ***Class teachers***

Four class teachers who are in charge of 4 classes where five children studied were participated in this research.

Their duties were to:

Be interviewed about the requirement of children's development;

Complete a baseline measurement for every child with Autism Treatment Evaluation; Checklist (ATEC) before the study began and measured after the final session;

Evaluate the progression of every child after group therapy sessions.

### ***Guardians of Children***

There were five guardians of children whose duties were to:

Send their children to the therapy room;

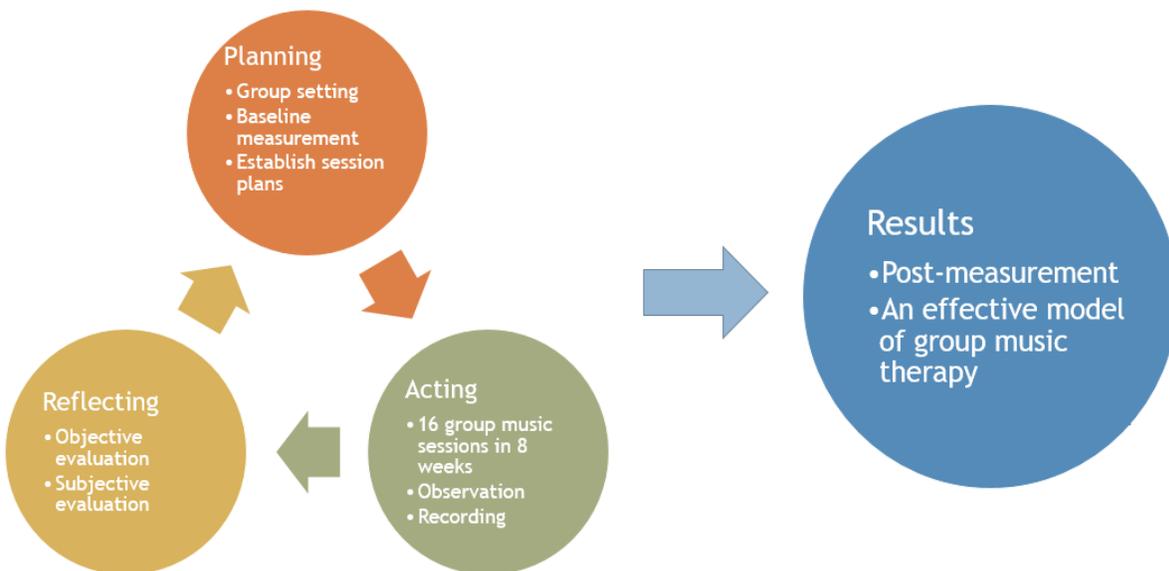
Complete a baseline measurement for every child with ATEC before the study began and measured after the final session;

Evaluate the progression of every child after group therapy sessions.

### 3.3 Procedure

This study employed an action research and a single-subject research design. There were five phases of the research implementation.

Figure 3 Research Procedures



#### ***Phase 1: Measurement and Planning***

The researcher investigated the requirement of each child by interviewing their class teacher; evaluating the development level of each child with ATEC before the study began; and establishing group music therapy session plans with the therapist.

#### ***Phase 2: Acting***

The therapist implemented group music therapy sessions twice a week for 6 weeks.

#### ***Phase 3: Reflecting***

The researcher and therapist collected data with objective evaluation checklist and subjective evaluations for modifying group music therapy sessions. The researcher and

assistant completed the objective evaluation checklist and the music therapist submitted subjective evaluation for every session.

#### *Phase 4: Modification and Acting*

Based on the evaluations of every session, researcher and therapist modified group music therapy approaches and implemented the new sessions.

#### *Phase 5: Evaluation and Discussion*

The researcher asked class teachers and guardians to complete the post measurement about the development level of each child with ATEC and collected their opinion about the progression of child after the final session. The feedback of therapist was analyzed to help understand of the research results.

### **3.4 Data collection and analysis**

#### *Measurement*

Autism Treatment Evaluation Checklist (ATEC) was developed to assess the effects of treatment for the group through questions on their speech/language/communication, sociability, sensory/cognitive/awareness, and health/physical/behavior. It was found that ATEC was appropriate for the monitoring of progress in children with ASD undergoing interventions (Magiati, Moss, Yates, Charman, & Howlin, 2011).

The class teacher and one of child's guardians completed a baseline measurement for every child in this group with ATEC before the study began and a post measurement after the final session. It provides several subscale scores as well as a total score to be used for comparison by comparing the baseline scores with the post-treatment scores. **Basically, the lower the score, the fewer the problems.** Thus, if a child scores a '20' at the beginning of treatment, and then a '15' six weeks later, then the individual showed improvement. In contrast, if the score was '30,' then the individual's behavior worsened.

#### *Evaluation*

In this action research, the objective and subjective evaluation were both used. The objective evaluation could show the varying degrees of success with each child achieving his/her goal (Goodman, 2007, p.32). The assistant observed and recorded how children achieved the goals with the objective evaluation list in every session. The researcher

recorded the subjective evaluation. The researcher observed and recorded the group dynamics and the problems happened during the whole session. Every change of treatment approach was based on these two evaluations of every session.

### ***Interview***

After the last session, the therapist was interviewed to comment the group process and analyze what did or did not “work” in the group. The class teachers and guardians were interviewed to comment the progress of the child with these sessions.

### ***Data analysis***

Analyzing for the ATEC scores was computed using SPSS statistical package, in order to allow for data imputation for missing data points. The analysis of quantitative data helped to demonstrate the effects of group therapy sessions.

## **4. Implementation of Action Research**

The beginning of this action research was to investigate the developmental requirement of children in this group. This is the way to decide on the group music therapy goals. In the course of session planning, the long-term goals were breakdown into gradations of expectation frequently based on observable or quantifiable criteria namely that of formulating short-term objectives embedded in musical experiences. Further, considerations in selecting and adapting materials for music therapy were outlined. It included vocal, instrumental, movement, and listening and musical game. Acting for twice a week, these group music therapy sessions lasted for 6 weeks. The reflecting included an objective evaluation and a subjective evaluation were made both in and after every single session. Accordingly, the subsequent session plan was modified with the reflection.

This group is composed of three boys and two girls, chronologically ages 7.5 to 9.5, attending the same special school in one district of Chengdu City. Most students in this school share the diagnosis of autistic spectrum disorder. Three children in this group belong to Class one and Class two in Grade one. The other two belong to Class one and Class two in Grade two. These children are recommended by their music teacher and class teachers as they are functioning developmentally at a higher level. In addition, most of these children have apparent interest in musical activities. As children with ASD, they have significant deficits in relatedness.

### **4.1 Goal planning**

For purposes of organizing goals for the group, it's important to review all the Individual Education Plans of the children and create the development grid for all group members. Further, it is vital to review this information and evaluate it with the therapeutic/educational team one is working with. These all help to determine each child's level of functioning in the group and are the foundation for choosing participants and planning group music therapy sessions.

#### 4.1.1 Creating the development grid

By reviewing the IEP of children and interviewing class teachers, the developmental grid was created (Table 2) to represent the developmental requirement of this group.

Table 2 Developmental Requirements of Children

<b>Name of Child</b>	<b>Cognition</b>	<b>Language</b>	<b>Social</b>	<b>Motor</b>
Long	<ol style="list-style-type: none"> <li>1. Sequential ability</li> <li>2. Recall and sequence past events</li> <li>3. Understand rules</li> <li>4. Logic thinking</li> </ol>	<ol style="list-style-type: none"> <li>1. Long sentence</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase attention</li> <li>2. Attend actively</li> <li>3. Maintain eye contact</li> <li>4. Interactions with peers</li> <li>5. Joint regard</li> </ol>	<ol style="list-style-type: none"> <li>1. Body control</li> <li>2. Cut complex shapes</li> <li>3. Fast reaction</li> <li>4. Coordination</li> </ol>
Yu	<ol style="list-style-type: none"> <li>1. Logic thinking</li> <li>2. Problem solving</li> </ol>	<ol style="list-style-type: none"> <li>1. Use language to plan and describe</li> <li>2. Respond contingently</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase attention</li> <li>2. Interactions with peers</li> </ol>	<ol style="list-style-type: none"> <li>1. Fast reaction</li> <li>2. Cut complex shapes</li> </ol>
Heng	<ol style="list-style-type: none"> <li>1. Understand rules</li> <li>2. Categorize</li> <li>3. Read</li> </ol>	<ol style="list-style-type: none"> <li>1. Respond to topics</li> <li>2. Use language to express actively</li> <li>3. Respond to questions</li> <li>4. Plan and describe</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase attention</li> <li>2. Attend actively</li> <li>3. Interactions with peers</li> <li>4. Maintain eye contact</li> <li>5. Joint regard</li> </ol>	<ol style="list-style-type: none"> <li>1. Write words</li> <li>2. Cut complex shapes</li> <li>3. Fast reaction</li> </ol>

Chen	1. Understand rules 2. Read 3. Problem solving	1. Respond to topics 2. Use language to express actively	1. Attend actively 2. Interactions with peers 3. Joint regard	1. Fast reaction
Min	1. Read 2. Understand rules	1. Long sentence 2. Practice causality 3. Respond to questions	1. Interactions with peers	1. Write words 2. Practice running and skipping 3. Respond to directions

#### 4.1.2 Evaluating group priorities

The development grid shows various levels of goal achievement expected for different children in this group. The group priorities evaluated by review goals to determine which are best addressed through group music therapy. Especially in the case of an autistic child group, prior goals were focus on communication and socialization. Meanwhile, goals that can be handled in terms of methods and evaluation were prioritized.

*Related social goals* include the following:

Attend actively (Long, Heng, Chen)

Increase attention (Long, Yu, Heng,)

Maintain eye contact (Long, Heng)

Increase length of interactions (Long, Yu, Heng, Chen, Chen)

With joint regard (Long, Heng, Chen)

*Related communication goals* include the following:

Plan and describe (Yu, Heng)

Long sentence (Long, Min)

Respond contingently (Yu)

Causality (Min)

Respond to topics (Heng, Chen)

Express actively (Heng, Chen)

Respond to questions (Heng, Min)

*Related cognitive goals include the following:*

Problem solving (Yu, Heng, Chen)

Understand the rules (Long, Heng, Chen, Min)

Categorizing (Heng)

Logic thinking (Long, Yu)

Reading (Heng, Chen, Min)

Recall and sequence past events

Sequential ability (Long)

*Related motor goals include the following:*

Body control (Long)

Fast Reaction (Long, Heng, Yu, Chen)

Coordination (Long)

Cut complex shapes (Yu, Heng, Long)

Write words (Heng, Min)

Practice running and skipping (Min)

Respond to directions (Min)

In response to the question, *which goals are best addressed through music therapy?* I concluded as followed:

*Social:* Continuous interaction and eye contact are necessary to do components of any group music therapy session. Appropriate music activities could promote their attending. The joint regard could always be practiced in a group by imitation, cooperation, sharing.

*Expressive language:* Any aspect of expressive language can be addressed in the course of conversation with a child as the therapist models the appropriate level of language. With songs and games, the therapist motivate children to respond questions, topics and so on.

*Cognition:* Through song, vocal and instrumental activities, all cognitive goals could be approached as well as in functional ways such as choosing instrument, counting, using pictures with simple words to read lyrics or decide on musical activities.

*Motor:* Both fine and gross motor could be practiced in any movement, instrumental or interactive song activity. With the cues from lyrics and rhythm, children change their movement. Respond to directions could be a natural process in activities.

#### **4.1.3 Deciding on group goals**

Accordingly, the group music therapy goals established for this group are as follows:

*Social goals* include the following:

- Attend in activities
- Increase length of interactions
- Maintain eye contact
- With joint regard
- Share and taking turns

*Communication goals* include the following:

- Repeat words
- Respond to questions
- Describe stories and feelings
- Expression focus on one topic

*Cognitive goals* include the following:

- Understand the rules, lyrics, and stories
- Recall and sequence past events
- Remember names, lyric
- Categorize colors, instruments
- Understand and act the directions

*Motor goals* include the following:

- Fast Reaction
- Coordination
- Respond to directions
- Practice running and skipping
- Play instruments

#### **4.1.4 Handling stumbling blocks**

In this group, there are two levels of functioning. It's very hard for Long and Heng to observe others and sharing in turn. The best things this group could give are that the higher level functioning children can serve as models and the group offers lots of opportunities for children to learn to behave as a group member.

#### **4.2 Writing Music Therapy Objectives**

For purposes of group music therapy sessions, it makes sense to stage the language of the short-term objectives in terms of behavior in the context of the music therapy session and musical behavior in the session (Goodman, 2007, p.136). The long-term goals were broken into objectives which proceed on two levels: 1) The musical experience supports changing non-music behavior; 2) The changes in the musical behavior of the child are intrinsically related to developmental gains.

After reviewing goals previously established for group, firstly, I anticipated which musical interests/activities the group was working on in the session. I chose "Hello Song" and "Introduce myself" for singing, "Little Turtle" for movement and Brahms' "lullaby" for listening and body contacting. The melody and language of "Hello Song" and "Introduce myself" are easy to sing and pronounce. These two songs are for communication and cognition in the group and help to build relationship. Motor and cognition are linked to the movement song "Little Turtle". Body contacting happened to every child while they listened to "Lullaby". This is linked to social goals as well as interactive behaviors throughout all activity.

As necessary, I varied the expectations for each child involved in the objective. There are multiple levels of peer interaction and communication in this group. The therapist must keep these in mind while working with the group.

#### ***Sample Objectives Related to Goals Arrived at for this Group***

##### **Opening: Hello Song**

##### *Goals/Objectives*

1. Attend in activities, increasing length of interactions

- 1a. Observe and imitate the reaction between therapist and assistant, take the ball from therapist and pass the ball back to therapist
2. Use language to respond to other people
  - 2a. After therapist saying “hello”, the child could say “hello” back.
3. Maintaining eye contact
  - 3a. While passing and talking, the children keep looking at the therapist.
4. Practice joint regard, sharing and taking turns
  - 4a. Other children could wait for their turn and keep watch the reaction between therapist and one child.

### **Transition**

#### *Goals/Objectives*

1. Understand to the direction
  - 1a. Follow the direction of the therapist, and choose one card.
2. Increase expressive communication
  - 2a. Use words “I want sing/dance/listen” to express wants.

### **Vocal: Introduce myself**

#### *Goals/Objectives*

1. With joint regard, understand the rules.
  - 1a. Imitate the vocal of therapist.
  - 1b. Respond to therapist by using their own name.
2. Practice sharing and taking turns
  - 2a. Wait for their turn and keep watch the reaction between therapist and one child.
3. Say their name precisely
  - 3a. Use words “ I am XXX” to introduce themselves.

### **Movement: Little Turtle**

#### *Goals/Objectives*

1. With joint regard, respond to directions.
  - 1a. Observe the modeling of therapist
  - 1b. Wait for their turn and imitate the motor of therapist

2. Practice coordination of arms and legs
  - 2a. Crawl on the floor with the song “Little Turtle”

### **Listening: Lullaby**

#### *Goals/Objectives*

1. Be patient and relaxed
  - 1a. Follow the direction of therapist to lie on the floor.
  - 1b. Keep quiet and peaceful
2. Adapt to kind body contact with the therapist
  - 2a. Allow the therapist touch one’s arms and back by massage instrument.

### **Closing: Drum beating**

#### *Goals/Objectives*

1. Play the instrument to practice the fine motor.
  - 1a. Use drumstick to play the drum with one’s own rhythm
2. Share and take turns
  - 2a. Wait for one’s turn and share one’s feeling by playing drum.
3. Increase expressive communication
  - 3a. Use words “I am (not) happy ” to express feelings.

## **4.3 Music Therapy Materials**

After the decisions on goals and objectives, the choosing of music materials is the subsequent work. As it does in music therapy, the use of music is the single most therapeutic tool the therapist has. Goodman concluded two essential principles for presenting musical experience for a group of children: 1) The therapist must present music which is physiologically processed by the children; and 2) The therapist must present music that is adaptable for in the moment experiences to accommodate the developmental needs of children in the group (2007, p.150). According to these two principles, I chose music with the therapist for the group music therapy session in this research.

### 4.3.1 Songs for vocal

Each song I chose was evaluated in terms of their musical structure, lyrical content, and adaptability. These aspects of the song would be vital for achieving the developmental goals of children in this group.

#### *Opening and closing songs*

##### “Hello Song”

Musical structure: The range of this song is from  $c^1$  to  $g^1$ . The biggest interval embedded in the melody is a major third. Obviously, it could be suited to the vocal range of every child in this group.

Lyrical content: The song’s lyrics is “How are you, how are you, I am xxx (one’s name)”. This song as an opening song is good to express a kind grating and make a bridge connecting to each other. The language “how are you” are repeated for twice to promote the expression. The challenge in this song for children is to distinguish the first person “I” and the second person “you”.

Adaptability: When children were familiar with everyone in the group, the lyrics of this song could easily change to “who are you, who are you, I am xxx” in order to increase the interaction.

##### “Goodbye song”

Musical structure: This song uses the same melody with the “hello song”. Children could easily adapt it.

Lyrical content: The song’s lyrics is “Goodbye, goodbye, goodbye Ms. Lee” (the name would change to everyone’s name in this group). This song as a closing song is for children to practice the interaction with the group as well as the proper language in the farewell setting.

Adaptability: If any child couldn’t remember someone’s name, he/she could sing “goodbye everyone”.

#### *Activity songs*

##### “Head, Shoulder, Knees and Toes”

Musical structure: The melody of this song included two parallel sentences. The range of this song is from c<sup>1</sup> to a<sup>1</sup>. The biggest interval embedded in the melody is a minor fourth.

Lyrical content: The song's lyric is "Head, shoulder, knees and toes, knees and toes, knees and toes. Head, shoulder, knees and toes, eyes, ears, nose and mouth". This song could help children to cognize the different parts of their body. Following the therapist's motor and the lyrics, children should point to the right part of their body with their two hands. This activity could practice children's memory and increase their attention as well as practice the fine and gross motor.

Adaptability: Once children were familiar with the activity, the meter of this song could be speed up to provide for varying levels of functional responses within this group.

#### "Walking in a Round"

Musical structure: The melody of this song includes two parallel sentences. The range of this song is from a to g<sup>1</sup>. The biggest interval embedded in the melody is a minor fourth.

Lyrical content: The song's lyric is "walking in a round, walking in a round, walking, walking, walking, who's the first to stop/squat/turn-back?". The language of this song let children to repeat and remember many motor directions. Children learned to link these directions to their motor. The lyrics direct children to change their motor and offer a competition. Children should understand every direction then control their body with rapid reaction.

Adaptability: The lyrics could add any new components like "running, skipping, turn-right, and raise hand" and so on.

#### "Little Bell"

Musical structure: This song has 8 bars in meter two-four. The melody proceeds with repetitive minor or major third intervals. The range of this song is from c<sup>1</sup> to g<sup>1</sup>.

Lyrical content: The song's lyrics is "One little bell, sounds ding-dang ding-dang, ding-dang ding-dang, ding-dang ding-dang, sounds ding-dang". The "ding-dang" in Chinese is an onomatopoeia words like jingle. Children pronounced the repetitive

onomatopoeia while they played their little bell. They learned to catch the rhythm with the group. The motor of shaking the bell promoted their gross motor at the same time.

*Adaptability:* To stimulate interests and extend language of onomatopoeia, the instrument could change to another one such as beating the drum while singing the onomatopoeia “dong”. It is also good for children to practice different motor skills with the new instrument.

### *Songs that tell a story*

#### “Little Turtle”

*Musical structure:* The melody of this song includes two parallel sentences. The length of the song is 8 bars with two- four meter. The range of this song is from d<sup>1</sup> to a<sup>1</sup>. The biggest interval embedded in the melody is a major third.

*Lyrical content:* The song told a story about a little turtle climbs to the hill with its favorite bread and sweet. The turtle sounded very happy to go out. The lyrics also included two onomatopoeia words “hey” and “Yo”. Those words meant that the little turtle was trying hard to climb the hill and cheer itself up by the sound “hey” and “Yo”. This song would stimulate children to construct a setting like the lyrics described. And with the song, children would follow the therapist to crawl on the floor by cross some obstacles. Children also would inspired by the words “hey” and “Yo” to practice their coordination of arms and legs.

*Adaptability:* I made some cards to show the story “Little Turtle”. For the little turtle, the bread and sweets were its favorite food. For children in my group, I prepared many colorful cards that show different food like snack, fruits and so on. Children could create their own story to sing by choosing related cards. Accordingly, they would cognize and say words about more types of color and food.

### **4.3.2 Instrument**

The purposes of using instruments in the group music therapy include to develop both fine and gross motor of children, cooperation with others, respond to music from others, self-expression, and cognition of colors, rhythm, pitches, category. When I chose these three instruments below for the group, I evaluated the instrument activities in terms of musical structure, developmental appropriateness, and adaptability.

## 8-Note Diatonic Resonator Bell

The 8-Note Diatonic Resonator Bell (Figure 4) plays a varied of roles in providing melodic and harmonic accents.

Figure 4 8-Note Diatonic Resonator Bell



Musical structure: I chose this instrument for improvisation. Children played the notes as the modeling of the therapist and create their own piece.

Developmental appropriateness: It could stimulate auditory sense of children by tone color, and dynamic, different pitches as well. The activity about playing with 8-Note Diatonic Resonator Bell was designed to develop the fine motor of children, interaction with others in the group, and cognition of colors, pitches. The activity includes two parts. One is to cognize three notes C, D and E and plays them with a mallet. These three notes have different colors and pitches. Children would learn words “red”, “purple” and “blue” as well as sing each note by therapist’s playing. The other part of this activity was to play these three notes as the modeling of the therapist. They should concentrate on observing how the therapist played and imitate with the same sequence and rhythm.

Adaptability: The assignment of the resonator bells was varied. At the beginning of the therapy, the therapist could choose two or three notes. It was easier for children to remember and play. The therapist could add more notes according to the needs of high functioning level children subsequently.

## Percussion

I chose two kinds of percussion in-group music therapy sessions: Handshake bell (Figure 5) and Lollipop Drum (Figure 6).

Figure 5 Handshake Bell



Figure 6 Lollipop Drum



Musical structure: These two instruments were played with the song “Little bell”. Before being mentioned, this song has 8 bars in meter two-four. Children would play it when the lyrics cued.

Developmental appropriateness: These two instruments have different tone colors and shapes. The lollipop drum has a deep voice. The Handshake bell sounds loud and clear. By choosing their favorite one to play, children could be motivated to attend actively. Playing these two instruments could practice both fine and gross motor. Children would share their playing with other group members. They cooperate to play the instruments while they sing the song as well.

Adaptability: If some children could not catch the rapid rhythm of the song, they could either slow down their playing or play without singing.

### **4.3.3 Movement experiences**

Movement experiences listed below are used on the following levels: 1) listening while being physically manipulated to music (sensory intake); 2) watching while a visual is physically manipulated; 3) grossing motor start and stop; 4) finger plays; 5) one step directions; 6) multiple directions.

#### **“Lullaby”**

Children would be relaxed while listening to the music. It was benefit for children to control their mood. Through the massaging with tools by therapist, the sensory perception of children could be developed as well.

#### **“Head, Shoulder, Knees and Toes”**

The gross motor and fine motor of children were both practiced by moving arms and hands with this song. Children needed to concentrate on listening to the lyrics and rhythm and point the right parts of their body. Further, the changing of the meter would help to increase children’s reaction.

#### **“Little Turtle”**

Children crawled on the floor while listening to the lyrics and rhythm. It helps to develop their coordination of arms and legs. Melody and lyrics encourage kids to enjoy

sports. They imitated each other and crawl in a certain turn. This expression makes them happy to be involved.

#### “Walk in a round”

This activity lets children to repeat and remember many motor directions. Children learned to link these directions to their motor. The therapist changed lyrics to direct children step by step to change their motor and offered a competition in this activity. Children could learn to understand every direction then control their body with rapid reaction.

#### “Little Bell”

Children practiced different motors with the different instrument in this activity. They needed to catch the rhythm with the group while listening to the music. The motor of shaking the bell or beating the drum promoted their gross motor.

### **4.4 Methods**

After decisions on the goals, the objectives and materials for the group sessions, the methodology or specific steps taken were considered to present music experiences for the children. Multiple considerations of methodology included: the space being used, physical arrangement of the group, music therapy activity levels, music therapy strategies, incorporation of support and professional staff and music therapy format.

#### *The space being used for music therapy*

The room for the group music therapy was in a special school. It was a music room equipped with a piano, lots of percussions and other instruments like xylophone and bells. The room was quite large to accommodate musical experiences for vocal, instrumental, movement and listening enjoyment.

#### *Physical arrangement of the group*

Mostly, the therapist and children sat in a circle to promote eye contact with each other. As there are lots of instruments on the shelf stood in one side of the room, the group chose to sit a little bit far from the shelf in order to make children concentrate on their experiences. At the beginning of the series of therapy session, the group sat on the ground

mat. I changed to let the group sit on the chairs since one child of the group always cannot help himself to lay on the ground. The chair could show clearly positions for children to sit.

### *Music therapy strategies*

Based on the group goal I decided before, during the therapy sessions, methods used in the therapy sessions could be summarized as followed:

- Providing a clear format: Music therapy session format that makes sense given the purpose, preferences and functioning level of the group. Especially for this autistic children group, it is important that providing a clear format for children to gain familiarity with materials and activities. A basic session format was addressed for this group included an opening, closing and varied options for instrumental, vocal and movement activities.
- Prompting: In the group, children needed cue during every activity. The therapy used eye contact, sign language as well as simple words to prompt children to experience. These cues would fade away as children gain mastery.
- Modeling: The role of modeling was an important way to show the children what is expected of them and gain a contagious sense of excitement for what they are about to do through the music. Particularly at the fist introducing about an activity, the therapist demonstrate with instrument, vocal or movement for several times. Sometimes, the therapist would model the interaction with the assistant to show children how to do.
- Verbal process: As aforementioned, non-verbal communication was better to involve autistic children in the therapy. But there was a need to after activities to get some feedbacks from children. Children should be encouraged to express their feeling and preference simply. Even better, this kind of self-assessment helped children begin to feel a sense of empowerment in controlling what it is he or she wants to accomplish in the session.
- The repetition of material: With repetition of material, children could feel comfortable and predictability. It could invite children to attend in the activity

actively. Certainly, the repetition of material should avoid to be used as rote learning.

- Presentation of material at graduated levels of expectation: Music therapy activity levels were consistent with the various functioning levels of the children in this group. Materials should always be presented at graduated levels of expectation and emphases given the needs of different children.

*Incorporation of support and professional staff*

The therapist cooperated with a team include the researcher, the assistant, the class teacher and parents all the time. The goal of involving these personnel in the music therapy session was important. Personnel could take on a number of roles in the music therapy session like serving as models for music tasks, observing and evaluating to prompt the improvement of the session, helping children as need and so on. In this case, when one child was very fear to be with strangers at the beginning of the session, her mother was asked to company her until two sessions later.

The table (table 3) shows a sample session plan below by a description of what happened in the session that required the flexibility and changes of therapist in methodology as the session progressed.

Table 3 Sample of Session Plan

<b>No.6</b>		<b>Date: 09/12/2016</b>	
<b>Goals</b>	1.Social goals: Attending in activities; Increasing length of interactions; Maintaining eye contact; With joint regard; Sharing and taking turns.		
	2.Communication goals: Repeat words; Respond to questions; Describe stories and feelings; Expression focus on one topic.		
	3.Cognitive goals: Understand the rules, lyrics, stories; Recall and sequece past events; Remember names, lyric; Categorize colors, instruments; Understand and act the directions.		
	4.Motor goals: Fast Reaction; Coordination; Respond to directions; Practice running and skipping; Practice play instruments;		
<b>Format</b>	<b>Objectives</b>	<b>Materials</b>	<b>Methods</b>
<b>Opening</b>	accept the ball from therapist	Hello Song; a	1. The therapist and the group sit in a circle. The therapist

	<p>pass the ball to next child</p> <p>Sing the hello song with right lyrics</p> <p>keep eye contact while singing</p> <p>watch the interaction between therapist and other child 2 to 3 times</p>	small ball	<p>model singing the Hello Song 2-3 times;</p> <p>2. Therapist passes the ball to the child who sit next to the therapist while singing.</p> <p>3. After taking the ball from therapist, the child should sing the hello song back.</p> <p>4. Therapist encourages children to pass the ball to the next child since children are familiar with the singing.</p>
<b>Transition</b>	<p>practice to pronounce "listen", "sing" and "move"</p> <p>answer the question of therapist by using the sentence "I want to listen/sing/move" to express willing</p>	Picture cards	<p>1. Therapist shows children three cards on which words "listen/sing/move" were wrote with pictures.</p> <p>2. Therapist encourage children to say these words together.</p> <p>3. Therapist invites children to select with the card one by one and say what the next kind of musical experience he or she would like to do firstly.</p> <p>4. Therapist informs the children of the group choice.</p>
<b>Vocal</b>	<p>watch the picture cards and say the words wrote on the picture</p> <p>sing the song together while following the right lyric</p> <p>choose two pictures in turn</p> <p>put the new two words in the song and sing</p> <p>watch other children's choosing process at least 2 to 3 times</p>	Little Turtle; Picture cards	<p>1. Therapist shows the picture cards one by one followed as the order of the lyrics while singing the song for 2 to 3 times.</p> <p>2. Therapist invites children to follow her to sing while cuing children with the picture cards.</p> <p>3. Therapist shows other different picture cards and prompt children to express their preference through choosing cards.</p> <p>4. Therapist prompts every child to add the new words in the song and sing it.</p>

<b>Movement</b>	hold the hand with other ones	Walking in a Round	<ol style="list-style-type: none"> <li>1. Therapist and children stand in a circle;</li> <li>2. Therapist invites children to hold the hands with others;</li> <li>3. Therapist sings the song "Walking in a Round" and models how to move as the lyrics cues;</li> <li>4. At the first stage, children practice to walk/squat/stop;</li> <li>5. Therapist add new motor directions like run/raise your hands/turn around into the lyrics and models.</li> <li>6. Therapist invites children to react to the directions while singing.</li> </ol>
	watch the movement of other ones while listening to therapist		
	walk/squat/run/stop/raise hand as the lyrics direct		
	change motor to run/raise hands/turn around as the lyrics direct		
<b>Instrument</b>	observe and imitate the playing of therapist	Notes C/D/E of 8- Note Diatonic Resonator Bell	<ol style="list-style-type: none"> <li>1. Therapist plays notes one by one and invites children to play the same as therapist plays;</li> <li>2. Therapist sings the notes name Dol/Re/Mi while playing;</li> <li>3. Therapist prompt children to imitate the playing and singing of therapist;</li> <li>4. Therapist invites every child to play the notes as the order as they like to play one by one.</li> </ol>
	play the right note		
	sing the note as therapist played		
	sharing the playing of one's own		
<b>Closing</b>	listen to the singing of others	Goodbye Song; a small ball	<ol style="list-style-type: none"> <li>1. Therapist continues modeling of Goodbye Song;</li> <li>2. Therapist pass the ball to next child and prompt children to sing the Goodbye Song the child who hold the ball.</li> <li>3. The ball is passed to every child.</li> <li>4. The group sing with therapist to every child who hold the ball.</li> </ol>
	sing the right name with the group		
	look at the one who the group sing to		

## **4.5 Reflecting and Modification**

The main purposes of evaluation included the following (Goodman, 2007, p.245):

- Measure client progress
- Determine effectiveness of therapeutic strategies
- Recognize changes and patterns in client response to therapy
- Modify treatment approach as necessary
- Revise treatment plan as necessary

In this case, children participate in this group music therapy met for 40 minutes, twice a week. The group music sessions lasted for 6 weeks. The therapist implemented the planned sessions by following all the strategies with an assistant. The researcher and therapist collected data with objective evaluation checklist and subjective evaluations for modifying group music therapy sessions.

### **4.5.1 Objective Evaluation**

Every child in this group could achieve the objectives in different levels. Objective evaluation could follow the planned activity using a coded system. In every session, the researcher and assistant observed the therapy process and completed the objective evaluation in an evaluation form (table 4).

Children who demonstrate consistent behavior (✓+ Consistently Observed) over a period of sessions probably need more challenging objectives. Children who demonstrate appropriate response when cued (✓ Observed When Cued - Physical, Verbal, Visual) will benefit from a more accurate breakdown of what kind of cuing and how many times a child was cued before responding in order to modify the expectation up or down. Children who demonstrate inconsistent response (✓- Inconsistently Observed) over a period of sessions will benefit from further observation of the context in which there is positive or negative response. Finally, the therapist working with a child who shows no response to a task (NO) over a period of 2-3 sessions should reconsider the appropriateness of the task and the method. Another item, NA, could be added to indicate “no opportunity to observe.”

Table 4 Sample of Objective Evaluation

<b>Objective Evaluation</b>						
<b>Date: 2016.12.9 (No.6)</b>			<b>Evaluator Signature:</b>			
<b>CODE</b> √+ Consistently Observed √ Observed When Cued (Physical, Verbal, Visual) √- Inconsistently Observed NO Not Observed NA Not Applicable						
<b>Format</b>	<b>Objectives</b>	<b>Long</b>	<b>Heng</b>	<b>Min</b>	<b>Chen</b>	<b>Yu</b>
<b>Opening</b>	Accept the ball from therapist	√+	√+	√+	√+	√+
	Pass the ball to next child	√+	√+	√+	√+	√+
	Sing the hello song with right lyrics	√	√	√	√+	√+
	Keep eye contact while singing	√	√	√	√	√+
	Watch the interaction between therapist and other child 2 to 3 times	√-	√-	√	√	√+
<b>Transition</b>	Practice to pronounce "listen", "sing" and "move"	√+	√+	√+	√+	√+
	Answer the question of therapist by using the sentence "I want to listen/sing/move" to express willing	√	√	√	√+	√+
<b>Vocal</b>	Watch the picture cards and say the words wrote on the picture	√	√	√	√+	√+
	Sing the song together while following the right lyric	√+	√	√+	√+	√+
	Choose two pictures in turn	√	√+	√+	√+	√+

	Put the new two words in the song and sing	No	NO	NO	✓	✓-
	Watch other children's choosing process at least 2 to 3 times	✓-	NO	✓	✓+	✓+
<b>Movement</b>	Hold the hand with other ones	✓+	✓+	✓+	✓+	✓+
	Watch the movement of other ones while listening to therapist	✓	✓	✓+	✓+	✓+
	Walk/squat/run/stop/raise hand as the lyrics direct	✓	✓	✓+	✓+	✓+
	Change motor to run/raise hands/turn around as the lyrics direct	✓-	✓	✓	✓	✓+
<b>Instrument</b>	Observe and imitate the playing of therapist	✓-	✓-	✓-	✓	✓+
	Play the right note	✓-	✓-	✓+	✓+	✓+
	Sing the note as therapist played	✓	✓-	✓+	✓+	✓+
	Share the playing of one's own	✓+	✓-	✓+	✓+	✓+
<b>Closing</b>	Listen to the singing of others	✓	NO	✓+	✓+	✓+
	Sing the right name with the group	✓-	✓-	✓	✓	✓
	Look at the one who the group sing to	✓-	✓-	✓+	✓+	✓+

#### 4.5.2 Subjective Evaluation

The subjective evaluation served many purposes. It documented the therapist interpretation of behavior, the issues that the therapist perceives in connection to the progress or lack of progress on the part of a child in the group, necessary modification made in the session, issues related to group dynamics and the realization of a link from theory to practice (Goodman, 2007, p.255). In this case, the therapist submitted subjective

evaluation for every session, which provided a basis for reflective understanding of children and recognition of what the therapist had to change in the session.

***Sample of therapist's subjective evaluation***

*The group*

In the opening, transition and singing activities, children achieved the objectives very well. In the movement activity, children did better than last session obviously. In the instrument activity, for this session, I asked children to be leader to show their own play one by one while I following their playing. Most children could focus on this part very well.

*Long*

He still liked to lie down on the ground. Sometimes he could sit and face the group and shout occasionally. I need to prompt him all the time. He could complete over half tasks as asked. When we sing the Hello and Goodbye Song, he didn't like to wait his turn and be a follower. He was always confused about the order. In the instrument activity, he is more patient this time and did better.

*Heng*

He showed obviously less willing in attending activity. But with my cue, he could experience part of activities. Today, I was surprised with his singing in the activity *Head, Shoulder, Knees and Toes*. He sang this song very accurately and clearly while using his hand to the part of body by following the lyrics. In this activity, he kept eye contact with me for very long time. I could feel that he really enjoyed this activity. It made me think that he could has done very well with his favorite activity.

*Min*

Although Min's class teacher said Min always had unstable emotions, he looked very cheerful in the whole session. Sometimes, he couldnot keep his attention for a long time. He could sing very loudly as I invited.

*Chen*

This time, Chen was fine to enter into the therapy room by herself. She seemed distracted in the group and less eye contact with me. With my actively promotion, she could join the group and complete most of the activities.

*Yu*

She was doing well as before. But she seems less active attending than before. I need to keep encouraging and prompt her to share her singing with other child. I think that she need new challenges. I need to give her higher-level activities next time.

#### **4.5.3 Modification of the treatment approach**

Therapist interpretation of behavior, frequently based on a combination of therapist reaction to the children as well as the link from theory to practice, would result in modifications in the session that affect individual children as well as the group. This modification could happen spontaneously in the session as the therapist realizes that the approach is not working appropriately or the modification can be premeditated for subsequent sessions. Based on the collected information from the objective and subjective evaluations of every session, researcher and therapist modified therapy approach and implement the new sessions. In this case, the modifications included as following:

- Physical setting

Commonly, therapist and children sit in a circle to help the communication with everyone. In the session, we found sometimes therapist may leave her position to support one child to complete task. This would make it hard for other children to observe the therapist's eyes. So we adjusted that the assistants help the child to complete task while therapist promoting by eyes or words only. At the first time, in order to make children to feel relaxed and comfortable, the group sat on the ground mat. We found two children in the group were hard to control their body position. They would like to turn to another side or lay on the mat. Then we change the mats to chairs to show the clear position where the children should sit.

- Adjustment of strategies

For autistic children, it always better to show pictures than verbal presentation as they have better visual level. For example, in one session, therapist kept modeling to sing the song Little Turtle while leading children to crawl with her. This movement kept for 2 sessions. But in the third session, it was still hard for children to sing the Little Turtle song. Then we change the modeling method to show children the pictures and lyrics. Therapist broken the whole song into three pictures with simple words as same as the

lyrics. The first picture shows there is a little turtle that is crawling to the top of hill. The second and third pictures show two kind of food, which the lyrics mentioned. With these three pictures, children got a clear format of this song and a well understanding of the lyrics. In the other side, this way was demonstrated to support children to show a better memory in subsequent session. Further, we gave more choices for children in this activity. They could add some new favorite components in the song though choosing new pictures. This way really developed the cognition and positivity of children.

- Activity level

The activity levels must be considered about different functional levels of children in this group. We planned a listening activity *Lullaby* to help children to be relaxed at the beginning. At the second session, we invited children to use colorful tools to do the massage to one while listening to *Lullaby*. Children had more fun with these tools. In the other hand, they gradually accepted to be massaged by therapist. The relationship between therapist and children got closer. Finally, therapist invited children to do the same to other children. This also is helpful to build a kind relationship among all children. In addition, children experience friendly with everyone in the group and practice using different tools.

- Presentation of materials

It was said that music therapy materials must be presented at graduated levels of expectation and emphases given the needs of different children in the group. In the first place of an instrument activity, therapist gave every child a set of 8-Note Diatonic Resonator Bell. When children got this set of colorful and various bells, they cannot control themselves to follow the direction of therapist. They just tried to play the bells as they want. Therapist immediately took most of bells away. Only one note bell was holding by every child. After recognize the color and pitch of this one note, therapist invited children to play after her modeling. Then therapist adds another note bell to continue this activity. Gradually, children recognized more notes by imitating playing and singing. They finally could focus on their playing and sharing instead of distracted by too many new materials.

- Natural learning

At the beginning of therapy sessions, therapist always likes to ask children to look at someone to enhance eye contact with others. We found children show very negative expressions in this situation. Then we decided that therapist could cue the child by calling his/her name but not directly ask child to make eye contact with someone. We hope children could develop and build the relationship with others in a natural environment. We could offer more opportunities in the session for children to communicate with others.

- Presenting one step at a time

When children were hard to understand or complete the activity, therapist should simplify the activity by presenting one step at a time. For example, in the instrument activity with 8-Note Diatonic Resonator Bell, firstly, therapist prompts children to recognize the color of notes. Secondly, therapist modeled to sing the note name after playing the note repeatedly. Children naturally imitated the same note after playing. Finally, they practice playing the note while singing.

- Role change

In order to give more opportunities for self-expression of children, during the therapy session, therapist need to change roles all the time. They offered lots of chance for children to be the leader to share their singing or playing with others. For example, in an instrument activity, children were not always playing after therapist modeling but rather share their playing one by one. Therapist and other child would imitate the playing of the leader child. It could be an appropriate way to build confidence in children.

- Provide options

In order to encourage children to actively participate in activities, we found that it is better for children to choose their favorite material. In the activity *Little Bell*, children could choose any instruments such as hand bell, lollypop drum and so on. In fact, they do like this way in which they could find their favorite instruments and sing the song with playing the instrument.

## 5. Results

This chapter presents the data which have been collected with the measurement tool- ATEC and by interviewing therapist, class teachers and guardians of children. Quantitative data were processed by using SPSS software, and descriptive analysis was applied for data collected through interviews. The results of the data analysis are presented in the following part.

### 5.1 ATEC Results

#### 5.1.1 Subjects

The therapy group has five children with ASD, including two girls and three boys. They were studying in different classes of the same special education school.

Table 5 Demographic Information about the Subjects

Code	Name	Gender	Age
1	Long	male	7.5
2	Yu	female	8.5
3	Heng	male	7
4	Chen	female	8
5	Min	male	9.5
Number	5		

#### 5.1.2 Raters difference

Raters included five class teachers and five guardians of the children. They evaluated separately the development of the subject through answering questions about child's speech, sociability, sensory/cognitive/awareness, and health/physical/behavior.

Table 6 Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Class teachers	15.760	50	15.2430	2.1557
	Guardians	23.480	50	18.8942	2.6720

Table 7 Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Class teachers & Guardians	50	.723	.000

Table 8 Paired Samples Test

		Paired Differences		t	df	Sig. (2-tailed)
		Mean	Std. Deviation			
Pair 1	Class teachers - Guardians	-7.7200	13.1383	-4.155	49	.000

The original hypothesis is: the difference was not significant. While  $P > 0.05$ , the original hypothesis is admitted, which means there was no significant difference. When  $P < 0.05$ , the original hypothesis is rejected, which means there was significant difference. According to the table above, the conclusion is that there was a significant difference in rating between class teachers and guardians.

### 5.1.3 Gender difference

Table 9 NPar Tests

	N	Mean	Std. Deviation	Minimum	Maximum
Score	50	.76	7.458	-22	16
Gender	50	1.60	.495	1	2

Table 10 Mann-Whitney Test

Ranks				
	Gender	N	Mean Rank	Sum of Ranks
Score	Female	20	35.83	716.50
	Male	30	18.62	558.50
	Total	50		

Table 11 Test Statistics<sup>a</sup>

	Score
Mann-Whitney U	93.500
Wilcoxon W	558.500
Z	-4.101
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Gender

With the NPar tests and Significance testing, tables above show that the  $P < 0.05$ . It means that there was a significant difference in the effects of therapy between male and female.

#### 5.1.4 Group experimental results

According to the table below, the mean of total ATEC scores of the group members is 50.00 in the pre-test. The mean of total ATEC scores of the group members is 48.10 in the post-test. It could be concluded that the group got a little improvement through group music therapy.

Table 12 Descriptive Statistics of Group Experimental Results

		Number	Minimum	Maximum	Mean	Std. Deviation
Speech	Pre-test	10	4	14	8.90	3.281
	Post-test	10	2	15	8.00	4.190
Sociability	Pre-test	10	3	22	14.40	6.753
	Post-test	10	4	23	12.40	6.620
Sensory/ Cognitive Awareness	Pre-test	10	14	23	17.30	3.268
	Post-test	10	7	25	15.60	5.739
Health/ Physical/ Behavior	Pre-test	10	1	20	9.40	6.620
	Post-test	10	0	28	12.10	9.712
Total ATEC Score	Pre-test	10	31	70	50.00	14.197
	Post-test	10	18	73	48.10	19.433

Table 13 Test Statistics<sup>a</sup> of Group Experimental Results

	Speech	Sociability	Sensory/ Cognitive Awareness	Health/ Physical/ Behavior	Total ATEC Score
Mann-Whitney U	42.000	42.500	37.000	40.500	48.500
Wilcoxon W	97.000	97.500	92.000	95.500	103.50 0
Z	-.610	-.570	-.988	-.720	-.114
Asymp. Sig. (2-tailed)	.542	.569	.323	.472	.909
Exact Sig. [2*(1-tailed Sig.)]	.579 <sup>b</sup>	.579 <sup>b</sup>	.353 <sup>b</sup>	.481 <sup>b</sup>	.912 <sup>b</sup>
a. Grouping Variable: Pre-test and Post-test					
b. Not corrected for ties.					

The significance level P-value in the table above shows that there is no significant difference between the scores of pre-test and the scores of post-test ( $P > 0.05$ ).

### 5.1.5 Experimental results of single subject in the group

The figure (Figure 7) below shows that the total ATEC scores of Long in the pre-test and post-test are basically the same. After six weeks group music therapies, Long had no improvements in speech, worsened in sensory/cognitive awareness and health/physical/behavior, but an obvious improvement in sociability.

The figure (Figure 8) below shows that the total ATEC scores of Yu in the pre-test and post-test decreased obviously. That means Yu got improvements after six weeks group music therapy. She got improvements in every aspect.

The figure (Figure 9) below shows that Heng worsened in health/physical/behavior. It led to an increase in Heng's total ATEC score. It's worth mentioning that in spite of the increase in the total score, Heng made apparent improvements in sensory/cognitive awareness.

The figure (Figure 10) below shows that the ATEC score of Chen in the post-test decreased obviously. That means Chen had significant improvements after six weeks group music therapy in every aspect.

Figure 7 Experimental Variation of Long



Figure 8 Experimental Variation of Yu

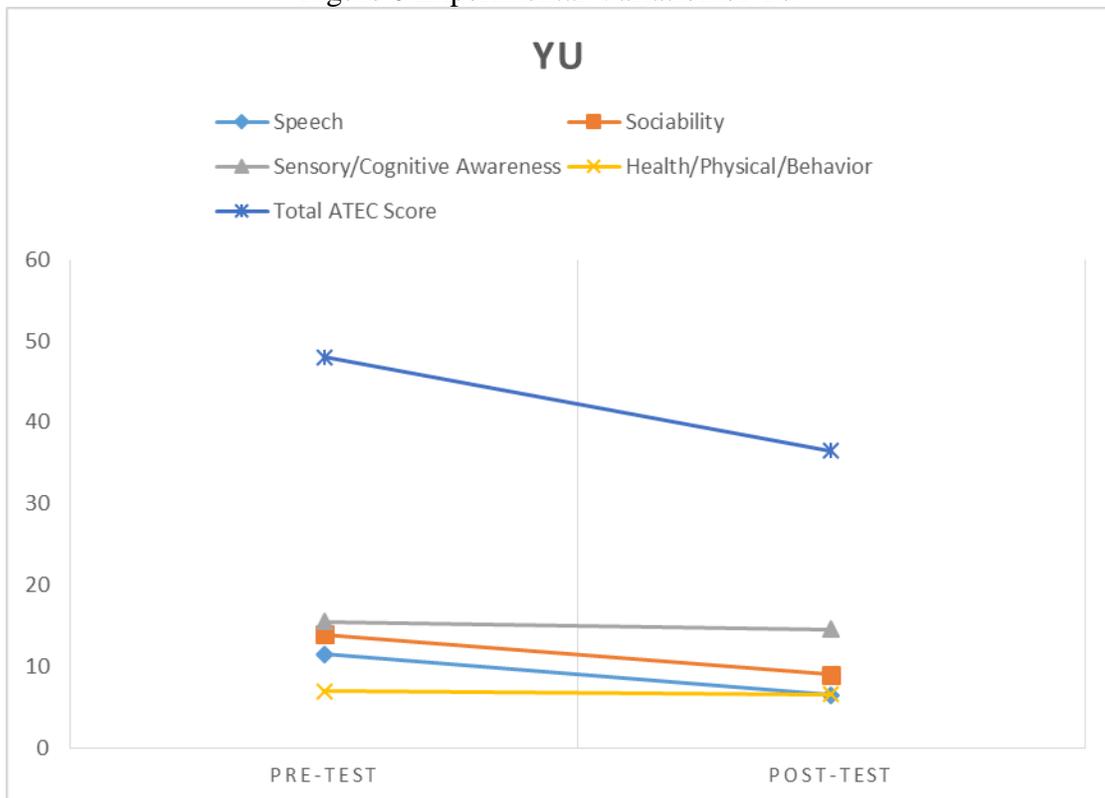


Figure 9 Experimental Variation of Heng

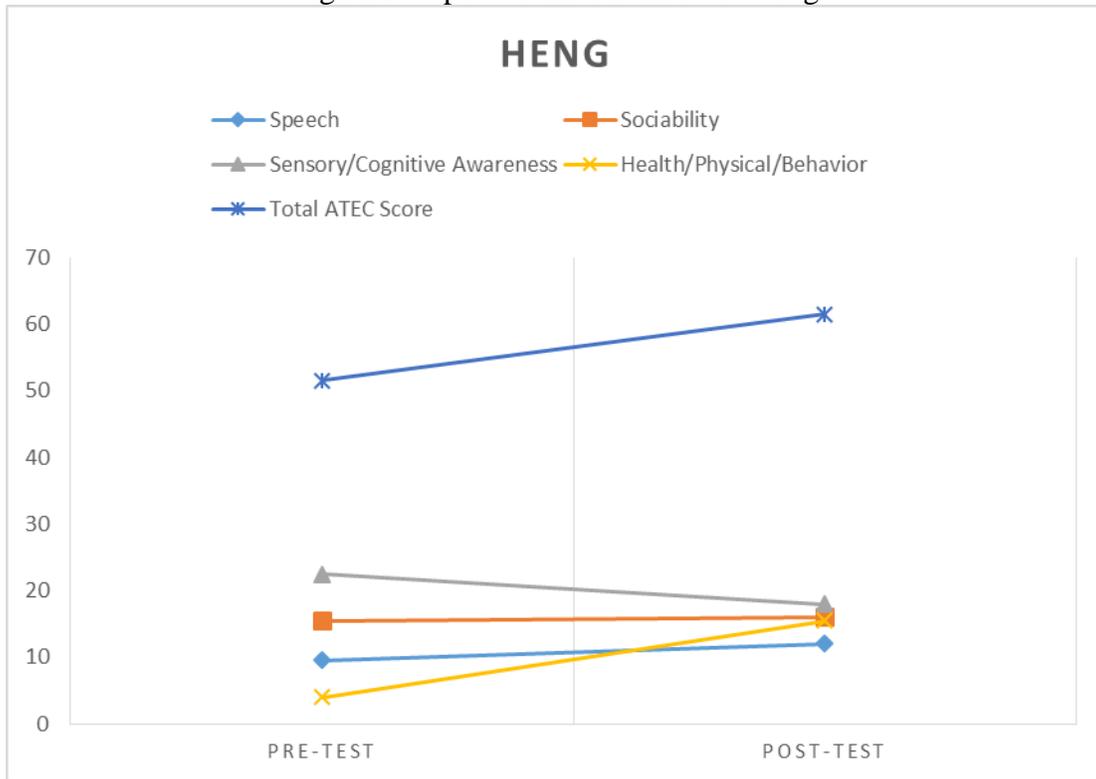
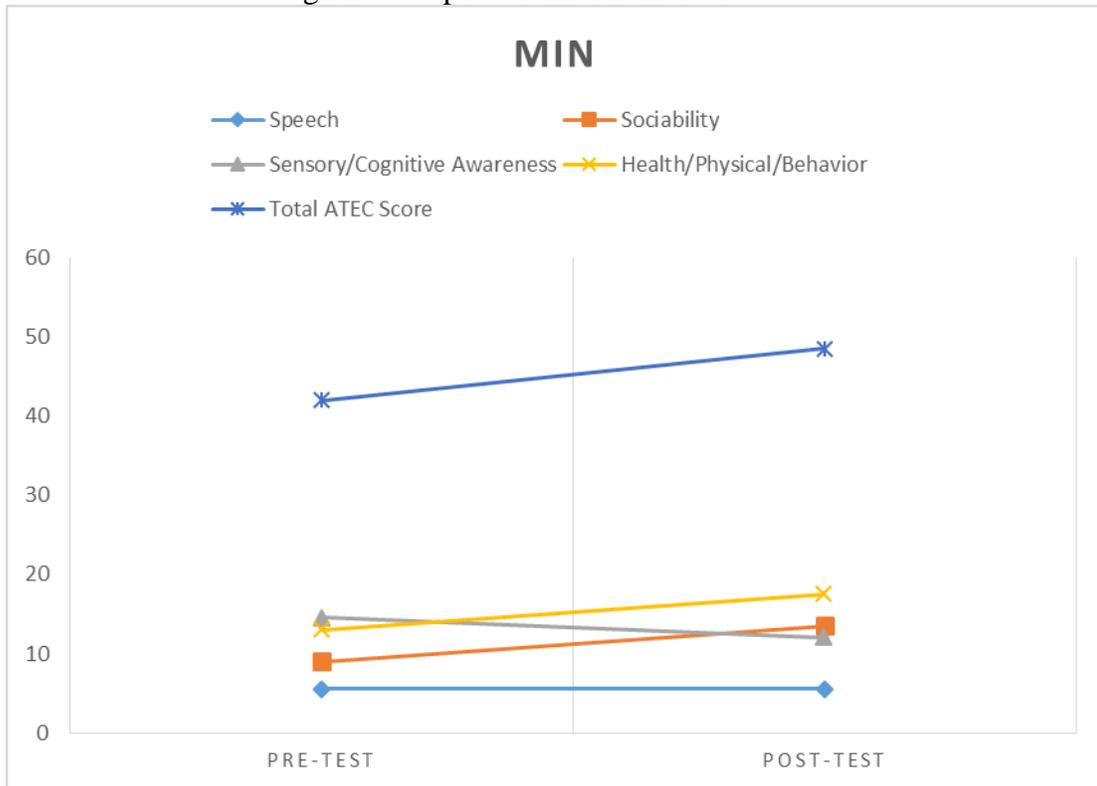


Figure 10 Experimental Variation of Chen



Figure 11 Experimental Variation of Min



The figure (Figure 11) above shows that Min worsened in sociability and health/physical/behavior. He only made improvements in sensory/cognitive awareness.

## 5.2 Interview Results

### 5.2.1 Class Teacher

Four class teachers were interviewed after final session. They respectively reported the development of every child in the following five aspects: cognition/emotion, language/communication, sociability, motor and musical performance. The table below has summarized their main opinions.

Table 14 Improvement of Children Reported by Teachers in the Interviews

Name of Child	Item	Development Status
Long	Cognition/Emotion	Concentration increased in some activity; Imitation ability improved
	Language/ Communication	No distinct development

	Sociability	No distinct development
	Motor	Coordination improved
	Musical performance	No distinct development
Yu	Cognition/Emotion	Emotion regulation improved
	Language/ Communication	Communicate with teacher actively
	Sociability	No distinct development
	Motor	Reaction to the direction became faster;
	Musical performance	Rhythm got distinct progression; Enjoy the music class; Complete music tasks well
Heng	Cognition/Emotion	Not actively; Understand simple directions; Weak imitation; Emotion unstable
	Language/ Communication	Communicate with some new words; Expression improved; Talk about his want occasionally
	Sociability	Level of attention on others improved
	Motor	Coordination improved
	Musical performance	Not clear
Chen	Cognition/Emotion	Understanding of direction improved; Better imitation ability; Stable emotion
	Language/ Communication	Not very active in communicating with other children; Express with single sentences
	Sociability	Significant increase in joint attention
	Motor	Coordination improved; Fine motor skills got better

	Musical performance	Passive perform
Min	Cognition/Emotion	Understanding and obeying of direction improved; Better imitation ability; Emotion controlling got improved
	Language/ Communication	Initiative of expression increased
	Sociability	Significant joint attention; Communicate with other children actively; Comment and attend activity actively;
	Motor	Coordination and accuracy got better
	Musical performance	Like to dance with familiar music; Sing or play with instruments actively sometimes

### 5.2.2 Guardians of Children

Five Guardians of Children were interviewed after the final session. They talked about the development status of every child through 5 aspects respectively: cognition/emotion, language/communication, sociability, motor and musical performance. The table below illustrates their basic opinions.

Table 15 Interview Results of Guardians

Name of Child	Item	Development Status
Long	Cognition/Emotion	Understanding of directions got better; Imitation ability improved
	Language/ Communication	Express by some new sentences
	Sociability	No distinct improvement
	Motor	Coordination got better
	Musical performance	Like to sing

Yu	Cognition/Emotion	Better understanding and obeying of directions; Imitation ability improved; Like to accept new component and things
	Language/ Communication	No distinct improvement
	Sociability	More patient; Acceptance level with other children got improved;
	Motor	No distinct improvement
	Musical performance	Like to join music activity very much;
Heng	Cognition/Emotion	More curious at new things; Understanding and imitation got better
	Language/ Communication	Expression sentence got longer
	Sociability	Attention on other's language and behavior got improved
	Motor	Coordination improved
	Musical performance	Like to sing in home
Chen	Cognition/Emotion	Willing to learn new things
	Language/ Communication	Care about the reason and ask "why" frequently
	Sociability	Eye contacting got better
	Motor	No distinct improvement
	Musical performance	Rhythm sensation got better
Min	Cognition/Emotion	More pleasant; Emotion controlling got improved
	Language/ Communication	Willing to express actively; Use sentence with 6 to 7 words; Express with new words and sentences

	Sociability	Willing to communicate with others
	Motor	Coordination got better
	Musical performance	Enjoy to sing

### 5.2.3 Therapist

The therapist was interviewed after the final session as a core member of this research team. Therapist summarized her perception about the effects of the group music therapy for children with ASD in the following aspects.

#### *Progress of this group progression*

Children in this group used to be very passive in their regular class activities. They were bad at emotion controlling most often. After participation in the group music therapy sessions, children made significant improvement in attending attitudes. They enjoyed being in the music therapy group and showed an active attitude in attending activity sometimes. They became happier and seldom had tantrums. In the last few sessions, Min showed great interest in music activities. He showed not only his own active attending but also passion in asking other children to join music activities by rule and line. Heng became better finally compared with the ways he behaved at the beginning of treatment. He made progress in following instructions and completing music tasks. Yu was a little shy at the beginning. After treatments, she could achieve most goals and showed great interest in music performance.

#### *Interaction with children*

With different children, the interaction ways are various. For Long, therapist should give very clear and strict instruction. For Heng, therapist should show enough patience for he needed more time to understand and perform. For Yu, therapist could encourage her to join the higher-level activities and praise her timely. For Chen, therapist should offer specific instructions and praise her after her completed the performance. For Min, therapist should offer specific instructions and more opportunities to him. He needed to be satisfied by his achievement.

#### *Understanding of children's behavior*

Every child has unique expressive ways. Long liked to play with his feet in which he relax or free himself. Heng liked to beat or shake by hands to show his happiness. Min

likes to use gestures to show his feeling rather than language; he pointed his cheek by using fingers to express his happiness all the time.

#### *Suggestions to future treatment*

It's better to have a transition before every activity. During the transition time, therapist could summarize children's performance and introduce the next activity. Another suggestion is to prolong the treatment duration. With longer duration, more specific activities could be designed to meet children's interest. More distinct improvements could be found as well.

#### **5.2.4 Summary**

The therapist, class teachers and guardians were interviewed to express their opinions on children's development after final session. The results of interviews showed that every child gained different improvements at various degrees. It could be concluded as followed:

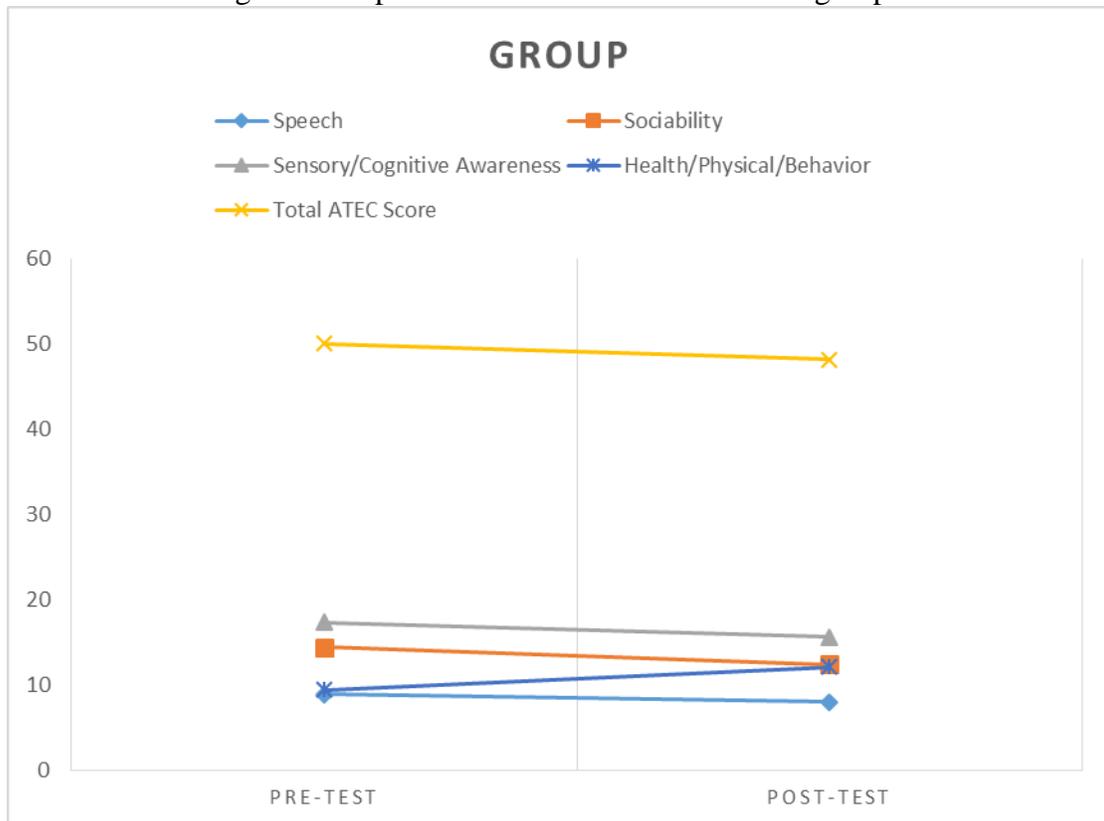
- Improvement in attending attitudes (Long, Min, Yu)
- Improvement in emotional control (Yu, Min, Chen)
- Improvement in accepting new things (Chen, Yu, Heng)
- Improvement in expressing actively (Min, Yu, Heng)
- Improvement in imitation ability (Long, Yu, Heng, Chen, Min)
- Improvement in coordination (Long, Heng, Min, Chen)

## 6. Discussion

### 6.1 Implications of group achievements

The effects of group music therapy for children with ASD were demonstrated with the data collected by ATEC and interviews. Since the total ATEC score of post-test is lower than the total ATEC score of pre-test by 1.9 points, it could be concluded that these group music therapy session made a little improvement for children in this group. Actually, the improvements were obvious in the areas of speech, sensory/cognitive awareness and sociability besides the worsening in health/physical/behavior. This result demonstrated the unique roles that group music therapy played for children with ASD (see Figure 12). It includes the improvements in joint attention, communication, interpersonal interaction, cooperation, and imitation.

Figure 12 Experimental Variation of the whole group



#### 6.1.1 Joint attention

Researchers considered the deficits in joint attention to be an early predictor of childhood autism (Osterling & Dawson, 1994) and to be pivotal deficits in language, play,

and social development in this population (Mundy, 1995). Joint attention is the shared focus of two or more individuals on an object. It is achieved when one individual alerts others to an object by means of eye-gazing, pointing or other verbal or non-verbal indications (Moore & Dunham 1995).

Usually it's hard for autistic child to start an activity of joint attention. They are better at being asked to express by motor. The group music therapy offered a setting to promote the development of joint attention of autistic children. In sessions, therapist prompted children to observe, imitate, comment and share in various activities. With the prompts from the therapist, it became more likely for most children in the group to accomplish the objectives listed below:

*Looking at someone while receiving something from someone*

In the opening activities of every session, children practiced to say "hello" while looking at someone who passed the ball to him/her. Generally, this objective could be accomplished by Yu consistently. Min and Chen could accomplish this objective when they were cued by therapist. Heng and Long could accomplish this objective occasionally.

*Looking at someone while giving something to someone*

When the ball was being passed in the group, the child always needed to practice looking at the next one who would accept the ball. Yu, Min and Chen could accomplish this objective consistently. Heng and Long needed to be cued sometimes.

*Following others' pointing to an object nearby*

In activities like singing "Little Turtle", therapist showed pictures about the lyrics. Children were interested in looking at these pictures. They used to follow therapist's pointing to different pictures while singing the song.

*Looking at the person who pointed to an object after seeing the object*

During transition of activities, therapist pointed three different pictures one by one and asked the children to express their wanting for next activity by choosing one picture. Most children in this group could look at the therapist after observing and choosing.

*Looking back at the partner to share happiness*

Min, in the sessions, liked to show his happiness to the therapist by pointing at his cheeks while looking at the therapist. Yu and Chen tended to share their happiness for being massaged by looking at the therapist.

### **6.1.2 Communication**

Language is the most direct and simple way to communicate one's feelings, needs and share information with others. Communication disorder used to be one of diagnostic criteria for autistic children. It's very important to develop children's abilities of non-verbal and verbal communication. Music is well known as a non-language art. Music therapy gives the chance for children who has difficulties in verbal expression to practice the skill of communication. Meanwhile, their wanting and the internal world could be understood in music activities. In this research, group music therapy sessions started from the facilitation of non-verbal communication to the training of verbal communication. As the result shows, three of the five children in this group made progress in speech to different extents.

#### *Facilitation of non-verbal communication*

The facilitation of non-verbal communication in therapeutic sessions included singing the "hello" and "goodbye" songs, instrument playing, pointing to the pictures, listening to music and performing as lyrics described. The therapist built kind relationship by singing the introductory songs and by responding to children's willingness through various rhythm, sound and motor performed by children in activities. Children in this group, after 2 to 3 sessions, could introduce themselves to others very well by singing the "hello" song. In addition, they enjoyed expressing their feelings in instrument activities and other creative activities.

#### *Training of verbal communication*

At the beginning of the verbal communication training, the goal is to facilitate children's auditory consciousness and habit. Usually, the children with ASD have no deficit on audition. Therapists need to promote the auditory acceptance and auditory distinguish ability of autistic children. There are three ways for us to do this in group

music therapy sessions. As shown in the objective evaluation list below, children of this group could accomplish the related task.

- Distinguish tempos

Children need to follow various tempos in vocal, instrument and movement activities, for example, the activity they experienced while sing the song “head, shoulder, knees and toes”. The therapist sang this song while pointing to the related parts of the body at different speed. Children need to listen to the tempo and adjust their motor tempo.

- Distinguish tone colors

The therapist choose at least two instruments such as hand shake bell and lollipop to play in the activity “Little bell”. Children need to distinguish the different tone colors of these two instruments and sing the onomatopoeia words accurately.

- Distinguish the pitch

Learning to sing a song absolutely includes the pitch discrimination. Frist, the therapist modeled singing or plays the digital song document. Then the therapist invited children to follow her singing or music and to sing. While singing, children were focused on pitch discrimination and imitation. This could be practiced in instrument activity of 8-Note diatonic resonator bell as well. Children should play 1 to 3 notes with the modeling of the therapist. They experienced three different levels of pitch while playing different notes.

The other part of verbal communication training for children in this group is to facilitate their language development. The lyrics of songs include various words. Songs like introduce song and goodbye song could communicate with other people directly. In addition, the language in lyrics could be learned easily through singing some interesting songs.

### **6.1.3 Interaction**

Autistic children usually give others an impression of no eye contacting and avoiding to be close to people around. They tend to focus on what they have or what they are doing. They do have obvious difficulties in responding to other’s social initiation. In a group music therapy setting, children could practice interacting with the therapist and other

children frequently. The results of evaluations in this study show that children in this group made general improvements in social interaction.

#### *Rule consciousness*

As a group, it always has specific rules for children to follow. Sometimes they have to observe and listen. Sometimes they have to wait for their turn to perform. In the therapeutic activities, the therapist intensified children's rule consciousness by prompting the children to pay attention to others and wait for their own turn.

Besides singing or playing together, the therapist invited children to perform singing or playing one by one. At the beginning, Long and Heng liked to sing or play all the time. With the repeated prompting from the therapist, they finally became more patient to wait for their turn. Further, every activity has specific rules. Children learned to understand rules with instructions from the therapist and learned to behave as they were told. In the movement experience "walk in a round", the lyrics told many directions for the children to follow. The therapist helped the children to understand these directions by modeling and leading. At the second time, all children in this group could do this very well. Then therapist changed old directions to some new directions to practice children's understanding and reaction speed as well as order keeping.

#### *Sharing*

Autistic children have significant deficit in sharing of interests, emotions, or affections. Music activities always encourage children to share their performance. Children could show their interests, emotions and affections by singing or playing in various pitch, rhythm, tempo and tone color. The therapist gave children a large space for them to perform as they liked. During the performance, they definitely felt individual emotions and affections through observing and listening to other child.

#### *Participation*

Since autistic children have restricted, repetitive patterns of behavior, interests, or activities, they hardly notice other people or things in a strange or changing environment. They seem to be negative in participation. The only way to improve this situation is to find their interest and provide appropriate activities. It is not easy to meet all of their

interest because they are so different. There are some signs we can trace like the energetic music and play favorite instruments. These always encourage children to join the activity.

### *Cooperation*

Cooperation is another form of social interaction. It's very important for children to practice cooperating with others in a group. When they sing or play together, they do need to adjust themselves while listening to others. This improvement could be found when children adjusted automatically their tempo of rhythm to generate a group tempo. They gradually realized they were in a group and doing a group activity.

### **6.1.4 Imitation**

Although it's hard for autistic children to pay attention to other people around, children could benefit through learning from others. There are different kinds of performance in the group for children to watch and feel. In fact, they could follow children like themselves and behaved in the same or a similar way.

### *Manners*

Yu and Chen were good at keeping order and concentrating. They two showed a better manner compared with the other three children. For example, they could be patient to listen and wait for their turn. They performed and reacted timely when the therapist cued. The other three children imitated not only from the therapist but also from their peers.

### *Language*

As there were 5 children in this group, the language was intensified by both the therapist and the peers. For instance, in the song "Goodbye", children repeated "goodbye, goodbye, goodbye XXX(one's name)" to others one by one or together as well as the introduce song "Hello". Children with high level of abilities could always be a model for the other children.

### *Motor*

Most children in this group were very negative in movement. Their parents complained that it was hard to arouse the children to do sports. They had no habits of exercising in daily life. The group gave opportunities of competition and cooperation. Even if there

was only one child join the movement actively, other children could behave in a similar way. That's the effects of models.

### *Emotion*

Min and Chen show a cheerful emotion in the therapeutic sessions. Especially Min was excited all the time. He had less patience but more passion in joining activities. This kind of passion influenced other children to be involved in activities. It's infrequent for children to be upset during sessions.

## **6.2 Implications of individual achievements**

### **6.2.1 Analysis of different individual performance**

The table below shows change of every child in this group. As the results told, the significant improvement of several children mainly existed in areas of such as speech, sociability and sensory/cognitive/awareness.

Table 16 Individual ATEC score

Name of Child	Phase	Speech	Sociability	Sensory/ Cognitive Awareness	Health/ Physical/ Behavior	Total ATEC Score
Long	Pre-test	10.5	18.5	18.5	10.5	58
	Post-test	10.5	13.5	22	12	58
Yu	Pre-test	11.5	14	15.5	7	48
	Post-test	6.5	9	14.5	6.5	36.5
Heng	Pre-test	9.5	15.5	22.5	4	51.5
	Post-test	12	16	18	15.5	61.5
Chen	Pre-test	7.5	15	15.5	12.5	50.5
	Post-test	5.5	10	11.5	9	36
Min	Pre-test	5.5	9	14.5	13	42
	Post-test	5.5	13.5	12	17.5	48.5

### *Long*

Although Long's total ATEC scores were the same in pre-test and post-test, he still had improvement in his sociability. He didn't talk very much in sessions. Especially at the beginning sessions of group music therapy, he looked like to be immersed in his own world. With the prompt of the therapist, he could be involved in the group. That was

interesting for the researcher to observe that sometimes he looked unconscious in playing his feet. But once the therapist asked questions to him, he could answer most of the questions. That means that he did have unique experience in the group and understood what the therapist asked. He started from be self-centered in group performance. He had no patience for waiting for his turn. With the instructions of the therapist and modeling of other children, he learned to be more patient at the end of the therapy. His favorite activity was playing instruments. He completed tasks in this kind of activity very well. It could be imagined that there were great space for him to develop if the group music therapy could last longer.

#### *Yu*

She had significant improvement in the group music therapy especially in her speech and sociability. Music activity always simulated her to be involved in. She learned to communicate with the therapist firstly and started to be close and cooperate with other children in the group. Her favorite activity was to pass the ball and sing the introduce song. Her grandmother talked about her bashfulness of expressing at the beginning of this study. Surprisingly, she spoke and sang loudly all the time in the sessions. In addition, she showed good manner and concentration most of the time. Even if she has occasional repetitive language and behavior, she could be the good model for other children to follow. At the end of the sessions, her grandmother found her acceptance level with other children got improved. Another significant progress was her adaptability. In the first several sessions, she needed to sit on the settled position with steady neighbors otherwise she became anxious and mindless. The change happened from the seventh session. Therapist changed her position with new neighbor children in a circle. She didn't show any uncomfortableness with this.

#### *Heng*

Heng did not make significant improvement through this study. The result shows there was a little progress in his sensory/cognitive awareness. He usually was silent in the group. He only made eye contact if the therapist asked. His mother said even if he did not look at people, he listened to people around. Actually, he could understand and answer therapist's question most of the time. He spoke in a low voice. From the beginning to the

end of this study, he showed rarely interest in sessions. There was one exception. In the movement “Head, shoulder, knees and toes”, children sang together following the therapist while pointing the related parts of body as the lyrics mentioned. Heng showed great interest in this activity. He sang loudly and accurately. He could point to the right place of his body at the same time. Finally, in the last two sessions, his time of eye contact with the therapist became obviously longer. Further, he concentrated on playing instruments, singing and motor. Although the evidence of his development only in report from the therapist and his mother, we do believe the group music therapy offered an opportunity for him to experience in a music group.

#### *Chen*

Chen made significant improvement in all four areas after completed group music therapy. At the beginning phases of sessions, she had obvious difficulties in adapting to the change of environment. She was nervous to be in a strange room (music therapy room). Therapist allowed her mother to accompany her to be in the therapy room. Once she accepted joining the group, she could enjoy the therapy very well. Mostly, she has a stable emotion except for the fact that occasionally she couldn't help laughing. She would like to express her feeling and wanting, and her speech was clear and accurate. She could understand questions and rulers during the therapy. She would like to cooperate with other child to sing and play. The communication between her and the therapist or other child was natural. She could observe the behavior of Yu and sing loudly following Yu's performance.

#### *Min*

Min's ATEC scores indicate little improvement in his sensory/cognitive awareness. However, the results from subjective evaluation and interviews of class teacher and his mother showed that he made a significant progress in the group music therapy. First of all, before he was involved in this group, he showed unstable emotion in his class. He was upset and anxious most of the time. But in sessions, he looked very pleasant mostly. His remarkable motion was pointing his cheek with his fingers and meanwhile smiling. Secondly, his communication with others became more active. He would like to express his feeling and interests to other people such as talking about his favorite songs. His joint

attention performed very obviously. Once, he prompted Heng to follow the instruction of the therapist. This kind of behavior could rarely be observed in autistic child. That was impressive. Finally, during the group music therapy, his abilities of understanding, imitation and coordination were reinforced. His reaction was fast and accurate. Even if his pronunciation was not clear, he would like to answer questions and to express his ideas.

### **6.2.2 Specific individual benefits**

Apart from the group progress mentioned in the previous section, the specific individual benefits could be concluded as the following three aspects:

#### *Relaxation*

Music was testified by many experiments and research about its function of mood release. Music could make people relaxed both with slow tempo and active tempo. Most autistic children have unstable emotion since they have sensory deficits. Music activities offer the best experience for autistic children to adjust their mood. Children in this research group were often upset and anxious in the regular classrooms. With the proceeding of the group music therapy, they tended to exhibit more positive mood.

Such phenomenon could be found as smiling, lying down on the ground, unconscious humming. Since music activities prompted children to experience and express, children could know others' feeling and desires. That is very helpful to improve children's perception of others' mood.

#### *Self-confidence development*

Self-confidence is vital for children to face the future challenges. With self-confidence, child could resist negative pressure. It is hard for child to solve problem without self-confidence. They would be more liable to be more anxious and timid. Deficits in communication, sociability, behavior and sensory have impeded the development of self-confidence in autistic children. Music has abundant melody and various rhythm which can stimulate children to join activities.

In the sessions, the therapist paid attention to every child and invited children one by one to perform in their own styles. There were plenty of opportunities for child's self-

actualization. With detailed instructions from the therapist, the children gradually accomplished performance better. Their relationship with other people was improved as well. Further, children in this group became more optimistic.

#### *Cognition development*

The cognition development goals of children in this group were to understand the rules, lyrics, stories, recall and sequence past events, remember names, lyric, categorize colors, instruments, and to understand and follow the directions. During all of activities in the sessions, all of these goals were addressed. Especially, children learned to categorize colors and instruments, to express with new words and sentences, to comprehend lyrics and directions, and to understand and obey the rules. Although children like Long or Heng didn't like to answer questions and to express their thoughts, they could behave when was asked. It was mentioned by the class teachers and guardians that after music therapies children were more likely to accept new components and things.

### **6.3 Comparison of the evaluating results from class teachers and guardians**

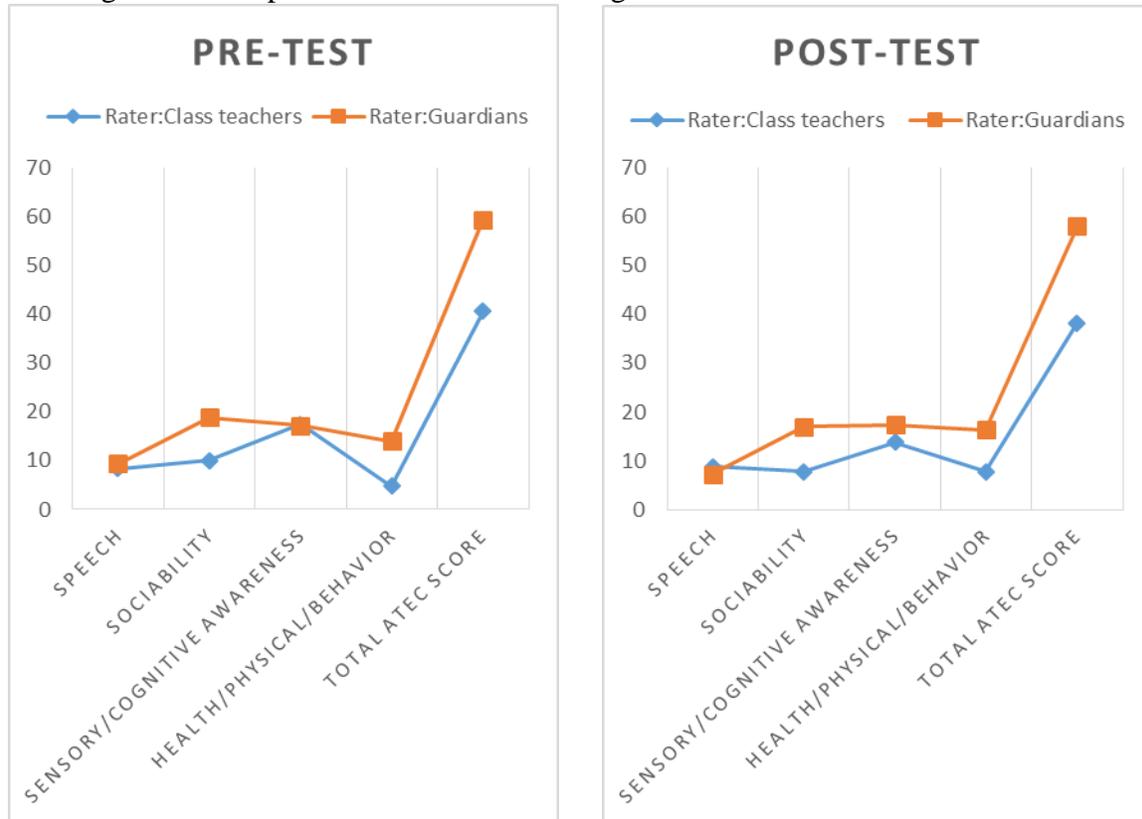
The result of ATEC score shows that there is a significant difference of rating between class teachers and guardians. The figure below (Figure 13) show the difference clearly.

In summary, the ATEC score rated by the class teachers is lower than by the guardians in each item of pre-test as well as of post-test. This means that the average development level of children evaluated by the class teachers is better than that evaluated by the guardians. The possible reason could be that the time of getting along with child for the guardians is much longer than the class teachers. In some ways the guardians knew the children better. In addition, class teachers would have different interpretation of the children's behaviors from that of the guardians.

Specifically, the most significant difference between the rating from the class teachers and the guardians are in the areas of sociability and health/physical/behavior. This further demonstrates that the method of interpretation and the length of duration of staying with child could influence the evaluation. As we know, class teachers need to pay attention to not only one child at the same time but the guardians only focus on one child. What they observed could be different. In the other hand, child would behave differently with different people. The therapist once told the researcher that Long's performance in the

therapy room was totally different from that in the classroom. Another class teacher also reported that she was surprised to see Min’s good mood, and she said Min had been upset for very long time.

Figure 13 Comparison of the ATEC Rating from Class Teachers and Guardians



## 6.4 Suggestions for the practice of group music therapy for children with ASD

This research demonstrated the effects of group music therapy for children with ASD. The pivotal principles, methods, strategies could be concluded to improve the future practice of group music therapy for autistic children.

### 6.4.1 Principles of session planning

When we start to plan session for autistic children, four principles should be considered. These principles play important roles in the process of making decisions about goals, methods, forms and materials.

*Individual differences-based*

Every child has different cultural background of families and school education. They have various personalities, ages and genders. All these have placed them at various development levels. Their levels and styles of performance and behavior are totally different as well as their perceptions of music and musical abilities. Therapists should make session plans after evaluating the functioning levels of every child. The child's performance needs to be observed, recorded and analyzed.

#### *Communication stimulation*

As mentioned before, autistic children generally have deficits in receptive or expressive communication skills. Therapy session should stimulate autistic children to communicate with others. Even if some children have no obvious deficits in speech skills and nonverbal communication, they perform negative attitudes in attending activities. Music therapists can use music elements like melody, rhythm, pitch, dynamics and form to stimulate communication and to practice speech and language skills (Adamek & Darrow, 2010, p.208). It's important to encourage children to create and imitate rather than to simply judge their musical abilities or correct their mistakes.

#### *Adaptability*

The level of music therapy activity should consistent with the functioning levels of the children in the group (Goodman, 2007, p.177). Therapists should consider appropriate methods, activity forms and materials according to children's capacities. For instance, therapists choose related concepts based on a child's current cognitive level. As we know, autistic children generally have lower mental age. Therapist should to be flexible and adaptive in formulating goals, methods and materials as well as responding to any spontaneous events in the music therapy session.

#### *Detailed planning*

That's not enough to only formulate goals and objectives. The objectives should be subdivided to detailed procedures and steps. This could make it easier for children to be close to or to accomplish goals. Detailed instructions reassure children to join the activity as they know what they would experience. For instance, therapists should always give directions or tasks step by step to children rather than a whole chunk of instructions.

## 6.4.2 Goals and objectives

### *Evaluate the developmental requirements of children*

Before deciding the goals for the group, therapist should know the development requirements of children by using approaches as following.

- Review the Individual Education Plan (IEP) of children
- Observe children's performance in the classroom
- Interview children's parents
- Interview children's teachers
- Assess children's musical abilities and interests with assessment tools

### *Develop group goals*

Based on the investigation results of children's developmental requirements, therapists evaluate the priorities in the group to determine which should firstly be addressed through group music therapy. Goals primarily focus on improving communication skills, social skills and behavior because children with ASD have obvious impairments in social communication, social interaction and exhibit restricted, repetitive patterns of behavior, interests, and activities. The following goals could be addressed through group music therapy.

- Promote social skills
- Reinforce emotional expression
- Teach academic concepts
- Develop gross and fine motor
- Practice language and communication skills
- Improve target behavior

### *Formulate objectives*

Having reviewed goals already established for the group, the therapist should break the long-term goals down to short-term objectives. Objectives are expected results of short-term intervention. Considerations of formulating objectives are as following:

- Objective should be related to long-term goals continuously.
- Objective should be observed or quantified in a short time.

- Objectives would be adjusted and changed with every child’s achievements.
- Objectives could be adapted for the functioning level of the group.

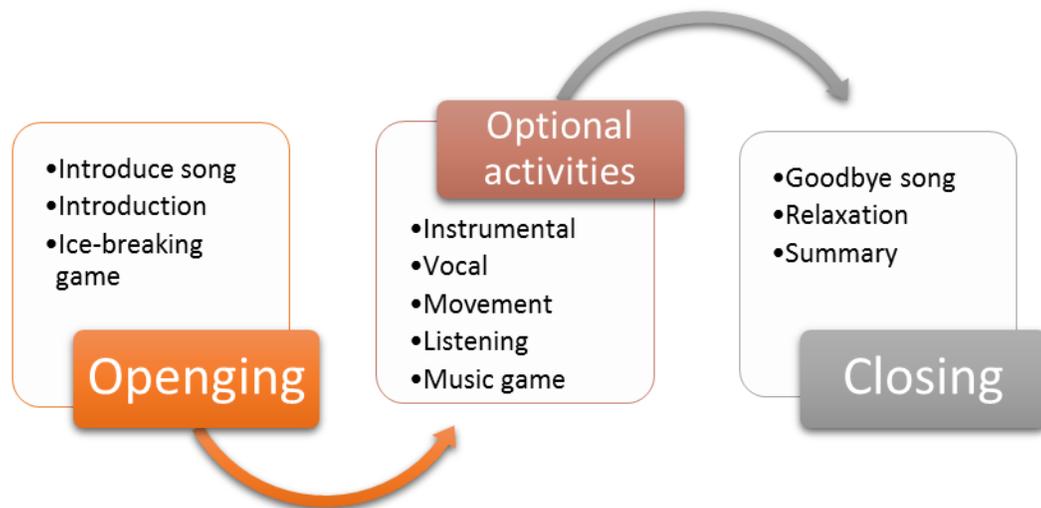
### 6.4.3 Format

Music therapy session format helps therapists forecast the organization of the session and this can be helpful to autistic children who needs structured activities (Goodman, 2007, p.213). Therapists could choose to use general session format or specific session formats. Each format plays unique roles in music therapy.

#### *General session format*

A general session format commonly includes an opening, a closing and varied options for instrumental, vocal and movement activities (Goodman, 2007, p.213). The advantage of this format is the inclusion of diverse activities. It could be applied for groups including children with different functioning levels.

Figure 14 General Session Format



#### *Specific session format*

If the therapist needs to organize therapies with some specific goals for the group, the therapist could choose a specific session formats for some kind of specific goals. It could be a single form rather than a comprehensive form. The therapist could follow a developmental progression be modified from existing adult models (Unkefer, 2000), and

organize under various main categories (Goodman, 2007, p.213) like vocal ensemble, songwriting, improvisational dance, relaxation, guided music listening, music appreciation, instrumental ensemble, activity songs and so on.

#### **6.4.4 Materials**

Selective use of music is one of the defining features of a therapist's work. Goodman (2007, p.150) talked about two principles in presenting musical experience for groups of children. One is that therapists should present music that is physiologically processed by the children. Another is that therapists should present music that is adaptable in the moment experiences to accommodate the developmental needs of children in the group. Based on this two principles and practice in group music therapy, I summarized three aspects of consideration in selecting music materials.

##### *Interesting content and form*

Autistic children generally have limited interests. In order to promote children' active attending, it's vital to know their possible music fondness. The content and form of music activity should be related to children's interests. This could be embedded in lyrics, tempo, dynamics and tone color. For instance, Min liked to dance with songs with fast tempo. Chen liked the sound of xylophone. Yu liked vocal activities. Therapists should consider children's interests in presenting music for children to be happy with the group. That's the foundation which enables sessions to proceed continuously.

##### *Adaptability*

It's important for the therapist to flexibly employ music materials as there always are different levels of musical response in the group. Materials therapist chose should be adaptive in some of the following ways:

- Simplify lyrics
- Extend lyrics
- Personalize songs
- Related to other activity
- Re-creative with instrument
- Add new components in

- Adapted designs of instrument

#### *Pertinence*

Considerations in selecting materials not only include inviting children to attend actively but also the pertinence to group goals. That's the ultimate task of music therapy. The following goals could be addressed in music materials of vocal, instrumental, movement and listening and so on.

- Songs to reinforce good behavior such as “The Listening Song” and “You've Got to Wait”
- Songs and instrumental activities to teach concepts and problem solving skills such as “Everyone Has Strengths To Be Proud Of “ and “It's OK That Sometimes I Don't Understand”
- Movement to develop gross and fine motor, coordination such as “Everybody Touch Your Head” and “Finger Dance”
- Songs for speech and language Skills
- Songs for understanding and acceptance of emotions such as “Big Kids Know How to Cry”, “Breathing In, Breathing Out” and “The Calming-Down Song”
- Songs to teach social skills such as “Eye to Eye”, “Friends & Sharing” and “Let Me Play Too”
- Songs to teach everyday routine skills such as “Hand Washing Song”, “I Am Dressed” and “I Use Them to Eat”

#### **6.4.5 Methods**

Children with ASD had obvious impairments in social communication, social interaction and had restricted, repetitive patterns of behavior, interests, and activities. Goodman (2007, p.194) mentioned therapists should consider a relationship-based approach where the emphasis is on musical relatedness and interpersonal relatedness and structured within the musical experience to working with autistic children. This approach needs to deliver the sense of structure to autistic children in improvisational experience. Other effective methods were demonstrated in this research which are originally from Goodman mainly include:

- Provide a clear format for the music therapy session

- Encourage the children to choose their favorite materials, and encourage various music activity
- Break down the presentation of music activities, presenting one step at a time, simplifying as necessary and providing modeling and prompting
- Encourage shared communication and natural eye contact amongst the children by turn taking types of instrumental, movement and vocal activities

In the other hand, the beginning of the session is a very important stage for building positive relationship between therapists and children. Strategies addressed in group music therapy were as following:

- Self-expression  
Therapist should treat children kindly, concern children sincerely and reassure them in the group.
- Non-verbal communication  
Therapist should use the elements of music like notes, rhythm and various dynamics to find a way of communication with children.
- Illustrate vividly  
It was better to illustrate by body language while directing children in the activity rather than merely instruct with spoken language.
- Non-instructive  
The role of therapists is to support children to experience, express and develop, rather than to instruct children to learn music skills in the sessions.
- Structural environment  
The environment for group therapy should be structural. It cannot change all the time. There was a fixed order for children to sit one by one in this group. The distance between everyone was comfortable.
- Touching friendly  
As a stranger to children at the first session, the therapist should carefully avoid touching children. Some children could feel very sensitive and uncomfortable while be touched by strangers.

#### **6.4.6 Evaluation**

According to American Music Therapy Association Competencies (AMTA, 2006, date), the evaluation process requires that the therapist to “design and implement methods for evaluation and measuring client progress and the effectiveness of therapeutic strategies” (18.7) in order to “recognize significant changes and patterns in the client’s response to therapy” (18.3), presumably to “modify treatment approaches based on the client’s response to therapy” (18.2) and “revise treatment plan as needed” (18.4).

The evaluation of music therapy could be considered as the end of one stage of intervention and the beginning of another new stage of intervention. The results of evaluation can provide useful information for the design of following phases of intervention. Therapists should modify the objectives and methods for next goals. There are two aspects that therapists should consider in evaluation: principles and approaches of evaluation.

*Follow the comprehensiveness, continuity, identity and proportionality principle*

Therapists need to avoid a one-side evaluation but to apply a comprehensive evaluation. First of all, it’s necessary to establish an evaluation team which consists of various background raters. Secondly, during therapy sessions, progression should be evaluated continuously. The therapy for autistic children is a long-term procedure. Continuous evaluation helps therapist to analyze and summarize all responses from children in the sessions. It could ensure the therapy sessions are not far from the presupposed goals. Thirdly, therapists should identify the individual achievement of children in a group based on various individual original functioning levels. Individual differences are highly valued. Finally, the evaluation should be used to demonstrate the proportionality of goals and objectives of every intervention phases. Children in a group have different functioning levels as well as the sequence of prior development. The level of treatment should be increased gradually. It has critical influences on the results of the therapy.

*Employ objective evaluation and subjective evaluation*

To measure children’s progress, both objectives and subjective evaluation are necessary. Setting up objective evaluation grids are demonstrated in this research. It could measure children’s progress with a quantitative and observable list. It is usually

based on the initial goals and objectives. One advantage of objective evaluation is that it's free from bias, inference or interpretation (Goodman, 2007, p.246).

Subjective evaluation could help to avoid losing sight of additional specific information. It documents mainly the reaction of the therapist to the various group members and the interpretation of behaviors. Through the therapist's perspective, the subjective evaluation can be valuable in identifying children's achievements and modifying the subsequent session plan.

Both objective evaluation and subjective evaluation should be done after every session. Further, a progress report should be completed when children reaches closure in their group therapy. It consists of an overall compilation of information from previous work. A typical progress report should include (Goodman, 2007, p.265) the basis information of children and therapist, summary of services, goals and objectives addressed, interventions, summary of progress and recommendation for the future session.

### **6.5 Limitations of the study**

This study employed mixed methods with an action research and a single-subject research. The former is a qualitative research while the latter is a quasi-experimental research. This is the first time for the researcher to employ mixed methods in research.

The results show the development of children in this group was not balanced. Not every child made significant development after therapy sessions. It's complex to explain the results. Although the researcher analyzed the possible factors which may lead to this imbalance such as various children's functioning level, life environment and education background, the researcher are not sure about the exactly influent factor from group music therapy.

Six weeks is not sufficient to make significant achievement through music therapy, especially for autistic children, who generally have deficits in adapting to a new environment. Fortunately, the therapist in this research was familiar with these five children. They are not strangers to each other. It's a good start for them to build a closer relationship. Besides, materials presented in six weeks were limited. It's quite hard to address every child's interests. There was not enough time to try other specific formats in sessions as it's good for autistic children to be in a structured session.

With the limited samples and results, this research is emphasized to demonstrate the practical guidelines for autistic children with group music therapy. It may be helpful for people who are interested in servicing autistic children with group music therapy.

## **6.6 Conclusion**

This research was designed to demonstrate a practical model of group music therapy for children with Autism Spectrum disorder (ASD). Mixed methods were employed including an action research and a single-subject research. There were 5 phases of the research implementation including measurement and planning, acting, reflecting, modification and acting, and evaluation and discussion. Objects of this research were five children who were diagnosed with ASD. Having investigated the developmental needs of children and planed therapy sessions within two months, the researcher conducted twelve sessions of group music therapy within six weeks.

The results of single-subject research were collected with ATEC. The ATEC score of the group indicate:

- the group got a little improvement after group music therapy;
- there was a significant difference between male and female participants in the therapy effect;
- there was a significant difference in the rating between class teachers and guardians.

The results of every single group member with ATEC score indicate that two girls in this group gained significant improvement and other three boys achieved improvements only in several developmental areas.

In summary, except for the worsening in health/physical/behavior, the improvements were evident in areas of speech, sensory/cognitive awareness and sociability.

In the action research, the researcher and therapist collected data with objective evaluation checklist and subjective evaluations for modifying group music therapy sessions. The researcher and assistant completed the objective evaluation checklist and the music therapist submitted subjective evaluation for every session. Based on these evaluation results of every session, the researcher and therapist modified group music therapy approaches and implemented the new sessions.

The therapist, class teachers and guardians were interviewed after final session. The results of interviews indicate every child gained different improvements at various degrees such as improvement in attending attitudes, emotional control, accepting new things, expressing actively, imitation ability and coordination.

The results both of single-subject research and action research demonstrated the unique functions that group music therapies performed for children with ASD. It includes specific improvements in joint attention, communication, interpersonal interaction, cooperation, and imitation. Apart from progress as a whole group, improvements in relaxation, self-confidence, and cognition were also detected in different individuals.

With the experiences of practicing group music therapy for children with ASD in this action research, suggestions on the future practice have been proposed, including principles of session planning, goals and objectives setting, format, materials, methods and evaluations.

## **6.7 Recommendations for future research**

Although clinicians such as Nodrdoff and Robbins have done a great deal groupwork since the 1970s, the literature regarding the theories and practices of group music therapy for children with special needs is still limited. Some of the research articles have illustrated that children with ASD benefit from music therapy intervention, and the evidence supporting its use are primarily case studies. Comparative studies have used exceedingly small sample size (Reschke-Hernandez, 2011). Without logical, coherent research supports, the validity and therapeutic value of it are limited (Thaut, 2000). People have to find more evidence to support the use of music interventions under certain conditions to facilitate social, communicative and behavioral skills in young children with autism.

To make music therapy be recognized as a valid and effective treatment method for children with ASD, future research should strive to improve the sample size and increase the number of well-designed comparative studies (Reschke-Hernandez, 2011). Music therapists should publish their outcomes with enough information to give the future work instructions and strive to discover their potentially unique contribution to autism treatment in addition to adapting techniques from other fields.

Based on this research, large samples and long-term intervention should be considered for future research. In addition, an important concept, Continuum of Music Response (CMR),

has been proposed by Professor Goodman for therapists to conduct group music therapy sessions while anticipating different responses from different children in the group. It could be demonstrated in future research.

## References

- Abramo, J. (2012). Disability in the Classroom: Current Trends and Impacts on Music Education. *Music Educators Journal*, 99(1), 39-45. doi: 10.1177/0027432112448824
- Adamek, M., & Darrow, A. A. (2005). *Music in Special Education [with DVD]*. American Music Therapy Association. 8455 Colesville Road Suite 1000, Silver Spring, MD 20910.
- Allgood, N. (2005). Parents' Perceptions of Family-Based Group Music Therapy for Children with Autism Spectrum Disorders. *Music Therapy Perspectives*, 23(2), 92-99. doi: 10.1093/mtp/23.2.92
- Alvin, J. (1969). Work with an autistic child. In British Society for Music Therapy (Ed.), *Music therapy for autistic disability: A collection of articles on autism published in the British Journal of Music Therapy 1968-87, the Journal of British Music Therapy 1987-93, and conference papers of the BSMY 1960-92 (pp. 1-5)*. Hertfordshire, England: Editor.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders – V (5th ed.)*. Arlington, VA: American Psychiatric Publishing.
- American Association on Intellectual and Developmental Disabilities (2008), AAIDD information: Frequently asked questions on intellectual disability and the AAIDD definition. Retrieved from [http://aaid.org/docs/default-source/sis-docs/aaidfaqonid\\_template.pdf?sfvrsn=2](http://aaid.org/docs/default-source/sis-docs/aaidfaqonid_template.pdf?sfvrsn=2)
- American Association on Intellectual and Developmental Disabilities (2010), *Intellectual disability: definition, classification, and systems of supports (11<sup>th</sup> ed.)*. Washington, DC: American Association on Intellectual and Developmental Disabilities.
- American Association on Intellectual and Developmental Disabilities (2013), *Supports and SIS*. Retrieved from <http://aaid.org/sis/supports-and-sis#.VGCIVUuPrPC>
- American Association on Mental Retardation (2004), *Supports Intensity Scale: information*. Retrieved from <http://aaid.org/docs/default-source/sis-docs/sisoverview.pdf?sfvrsn=2>

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: American Psychiatric Publishing.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- AMTA. (2006). *Effectiveness of music therapy procedures: Documentation of research and clinical practice* (3<sup>rd</sup> ed.). Silver Spring, MD: American Music Therapy Association
- Anderson, G., & Arsenault, N. (2005). *Fundamentals of educational research* (2<sup>nd</sup> ed.). Philadelphia, PA: Taylor & Francis e-Library.
- Ashburner, J., Ziviani, J., & Rodger, S. (2010). Surviving in the mainstream: Capacity of children with autism spectrum disorders to perform academically and regulate their emotions and behavior at school. *Research in Autism Spectrum Disorders*, 4(1), 18-27. doi: <http://dx.doi.org/10.1016/j.rasd.2009.07.002>
- Baker F, Wigram T, Gold C. (2005). The effects of a song-singing programme on the affective speaking intonation of people with traumatic brain injury. *Brain Inj.* 19:519–28. doi:10.1080/02699050400005150
- Berger, D. S. (2002). *Music therapy, sensory integration and the autistic child*. Jessica Kingsley Publishers.
- Boutot, E. A., & Bryant, D. P. (2005). Social integration of students with autism in inclusive settings. *Education and Training in Developmental Disabilities*, 40(1), 14-23.
- Bower J, Catroppa C, Grocke D, Shoemark H. (2013). Music therapy for early cognitive rehabilitation post-childhood TBI: an intrinsic mixed methods case study. *Dev Neurorehabil.* doi:10.3109/17518423.2013.778910
- Bradbury, H., & Reason, P. (2003). Action research an opportunity for revitalizing research purpose and practices. *Qualitative social work*, 2(2), 155-175.
- Bradt, J., Burns, D. S., & Creswell, J. W. (2013). Mixed methods research in music therapy research. *Journal of music therapy*, 50(2), 123-148.
- Bruscia, K. E. (1998). *Defining music therapy*. Barcelona Publishers.
- Bryan, A. (1989). Autistic group case study. *Journal of British Music Therapy*, 3(1), 16-21.

- Bunt, L., & Stige, B. (2014). *Music therapy: An art beyond words*. Routledge.
- Centers for Disease Control and Prevention. (2014). *10 Things to Know About New Autism Data*. Retrieved from <http://www.cdc.gov/features/dsautismdata/>
- Chanda ML, Levitin DJ. (2013). The neurochemistry of music. *Trends Cogn Sci*. 17:179–93. doi:10.1016/j.tics.2013.02.007
- Clayton M. (2009). The social and personal functions of music in cross-cultural perspective. In Hallam, S., Cross, I., & Thaut, M. H. (Eds.), *The Oxford handbook of music psychology* (24-34). New York: Oxford University Press.
- Chen, L. etc. (2010). The empirical study on the effect of the intervention of music therapy for children with autism. *Chongqing Medical Journal*, 39(18), 2485.
- Chen, J. (2008). Research and practice in clinical improvisation of creativity music therapy method research. Master's Thesis.
- Chen, Y. (2008). Research on psychic music therapy for patients with bipolar disorder. *Clinical Medicine and Inspection*, 5 (13), 792-794.
- Cheng, S. (2010). Experimental study of the influence of music and subliminal information apply to the anxiety, depression, and cognition of termers. *Chinese Music*, (1), 244-250.
- Chengdu Municipal Government (2013). *The Special Education Development Report*.
- Clayton M. (2009). The social and personal functions of music in cross-cultural perspective. In Hallam, S., Cross, I., & Thaut, M. H. (Eds.), *The Oxford handbook of music psychology* (24-34). New York: Oxford University Press.
- Coolican, J., Bryson, S. E., & Zwaigenbaum, L. (2008). Brief report: Data on the Stanford-Binet Intelligence Scales (5th ed.) in children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 38, 190–197. doi: 10.1007/s10803-007-0368-2
- Cross, I. & Tolbert E. (2009). Music and meaning. In Hallam, S., Cross, I., & Thaut, M. H. (Eds.), *The Oxford handbook of music psychology* (24-34). New York: Oxford University Press.
- Data Accountability Center. (2009). *Children and students served under IDEA, Part B, in the U.S., and outlying areas by age group, year, and disability category: Fall 1998 through fall 2007*. Retrieved from [https://www.ideadata.org/arc\\_toc9.asp#partbcc](https://www.ideadata.org/arc_toc9.asp#partbcc)

- Davies, A., & Richards, E. (2002). *Music therapy and group work: sound company*. London; Philadelphia: Jessica Kingsley Publishers.
- Davies, S. (1994). *Musical meaning and expression*. New York: Cornell University Press.
- DeLoach Walworth, D. (2007). The Use of Music Therapy within the SCERTS Model for Children with Autism Spectrum Disorder. *Journal of Music Therapy*, 44(1), 2-22.
- Deng, Y., Li, X., & Huang, H. (2008). Analysis of the effect of music therapy on alleviate the anxiety of gastroscopy. *Modern Clinical Nursing*, (4), 42-44
- Denscombe, M. (2009). *Ground rules for social research: Guidelines for good practice*. McGraw-Hill Education (UK).
- Dimitriadis, T., & Smeijsters, H. (2011). Autistic spectrum disorder and music therapy: theory underpinning practice. *Nordic Journal of Music Therapy*, 20(2), 108-122. doi: 10.1080/08098131.2010.487647
- Du, Q. (2011). The research progress of music therapy in China in last decade. *People's Music*, (1), 68-71
- Dunbar, R. I. M., Kaskatis, K., MacDonald, I., & Barra, V. (2012). Performance of music elevates pain threshold and positive affect: Implications for the evolutionary function of music. *Evolutionary Psychology*, 10(4), 688-702.
- Ellis, R. J., & Thayer, J. F. (2010). Music and autonomic nervous system (dys)function. *Music Perception*, 27(4), 317-326. doi: 10.1525/mp.2010.27.4.317
- Eren, B. (2015). The Use of Music Interventions to Improve Social Skills in Adolescents with Autism Spectrum Disorders in Integrated Group Music Therapy Sessions. *Procedia - Social and Behavioral Sciences*, 197, 207-213. doi: 10.1016/j.sbspro.2015.07.125
- Fan, L. (2007). Applied study on music therapy in prenatal anxiety. *Medical Science*, 12, 20-22.
- Fitzgerald, M. (2006). "I Send My Best Matthew to School Every Day": Music Educators Collaborating with Parents. (Cover story). *Music Educators Journal*, 92(4), 40-45.
- Fukui H, Toyoshima K. (2008). Music facilitate the neurogenesis, regeneration and repair of neuron. *Med Hypotheses* . 71:765-9. doi:10.1016/j.mehy.2008.06.019

- Fukui H., Toyoshima K. (2008). Music facilitate the neurogenesis, regeneration and repair of neuron. *Med Hypotheses* . 71:765–9. doi:10.1016/j.mehy.2008.06.019
- Garfinkle, A. N., & Schwartz, I. S. (2002). Peer imitation: Increasing social interactions in children with autism and other developmental disabilities in inclusive preschool classrooms. *Topics in Early Childhood Special Education*, 22(1), 26-38.
- Garland, J. A., Jones, E., & Kolodny, R. L. (1976). A model for stages of development in social work groups. In S. Bernstein (Ed.), *Explorations in group work: Essays in theory and practice* (pp. 17-71). Boston: Charles River Books.
- Gaston, E. T. (1968). *Music in therapy*. New York; London: Macmillan (N.Y.).
- Gena, A. (2006). The effects of prompting and social reinforcement on establishing social interactions with peers during the inclusion of four children with autism in preschool. *International Journal of Psychology*, 41(6), 541-554.
- Geretsegger, M., Holck, U., Carpenle, J. A., Elefant, C., Kim, J., & Gold, C. (2015). Common Characteristics of Improvisational Approaches in Music Therapy for Children with Autism Spectrum Disorder: Developing Treatment Guidelines. *Journal of music therapy*, 52(2), 258-281. doi: 10.1093/jmt/thv005
- Goodman, K. D. (2007). *Music therapy groupwork with special needs children : the evolving process [Elektronisk resurs]*. Group psychotherapy. (2016, April 5). In *Wikipedia, The Free Encyclopedia*. Retrieved 09:18, April 27, 2016, from [https://en.wikipedia.org/w/index.php?title=Group\\_psychotherapy&oldid=71375793](https://en.wikipedia.org/w/index.php?title=Group_psychotherapy&oldid=71375793)
- 1
- Goldstein, H., Kaczmarek, L., Pennington, R., & Shafer, K. (1992). Peer-mediated intervention: attending to, commenting on, and acknowledging the behavior of preschoolers with autism. *Journal of Applied Behavior Analysis*, 25(2), 289-305.
- Grey, I. M., Bruton, C., Honan, R., McGuinness, R., & Daly, M. (2007). Co-operative Learning for Children with an Autistic Spectrum Disorder (ASD) in Mainstream and Special Class Settings: An exploratory study. *Educational Psychology in Practice*, 23(4), 317-327.
- Gutierrez Jr, A., Hale, M. N., Gossens-Archuleta, K., & Sobrino-Sanchez, V. (2007). Evaluating the Social Behavior of Preschool Children with Autism in an Inclusive Playground Setting. *International journal of special education*, 22(3), 26-30.

- Hammel, A., & Hourigan, R. (2011). The Fundamentals of Special Education Policy: Implications for Music Teachers and Music Teacher Education. *Arts Education Policy Review, 112*(4), 174-179. doi: 10.1080/10632913.2011.592463
- Hargreaves, D. J., & North, A. C. (1999). The functions of music in everyday life: Redefining the social in music psychology. *Psychology of music, 27*(1), 71-83.
- Harris, S. L., Handleman, J. S., Kristoff, B., Bass, L., & Gordon, R. (1990). Changes in language development among autistic and peer children in segregated and integrated preschool settings. *Journal of Autism and Developmental Disorders, 20*(1), 23-31.
- Harrower, J. K., & Dunlap, G. (2001). Including children with autism in general education classrooms: A review of effective strategies. *Behavior Modification, 25*(5), 762-784.
- Hays, P. A. (2004). Case study research. In K. deMarrais & S. D. Lapan (Eds.), *Foundations for research: Methods of inquiry in education and the social sciences* (217-234). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Hegde, S. (2014). Music-based cognitive remediation therapy for patients with traumatic brain injury. *Frontiers in Neurology, 5*, 1-7. doi: 10.3389/fneur.2014.00034
- Heward, W. L. (2013). *Exceptional children: An introduction to special education (10<sup>th</sup> ed.)*. Upper Saddle River, NJ: Pearson Education, Inc.
- Hibben, J. (1991). Group music therapy with a classroom of 6-8 year old hyperactive learning disabled children. In K. Bruscia (Ed.), *Case studies in Music Therapy*. Gilsum, NH: Barcelona.
- Hou, X. (2009). An action research on constructing support system for autistic children in preschool-inclusive education (Master dissertation). Retrieved from China National Knowledge Infrastructure.
- Huang, X., Fu, S. & Lin, S. (2008). Observation of the effect of relaxation training music therapy on anxiety symptom of hyperbaric oxygen therapy. *Chinese Medical Herald, 5* (16), 67.
- Hurt CP, Rice RR, McIntosh GC, Thaut MH. (1998). Rhythmic auditory stimulation in gait training for patients with traumatic brain injury. *J Music Ther 35*:228–41. doi:10.1093/jmt/35.4.228

- Hurt-Thaut C. (2009). Clinical practice in music therapy. In Hallam, S., Cross, I., & Thaut, M. H. (Eds.), *The Oxford handbook of music psychology* (24-34). New York: Oxford University Press.
- Iovannone, R., Dunlap, G., Huber, H., & Kincaid, D. (2003). Effective educational practices for students with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 18*(3), 150-165.
- James J. (1993). *The music of the spheres: music, science and the natural order of the universe*. London: Little, Brown and Co.
- Jin, Y. etc. (2008). Construction and application of visual music therapy system for special children. *Chinese Journal of Special Education, 95* (5), 7-12.
- Kamps, D. M., Barbetta, P. M., Leonard, B. R., & Delquadri, J. (1994). Classwide peer tutoring: An integration strategy to improve reading skills and promote peer interactions among students with autism and general education peers. *Journal of Applied Behavior Analysis, 27*(1), 49-61.
- Kamps, D. M., Leonard, B. R., Vernon, S., Dugan, E. P., Delquadri, J. C., Gershon, B., ... Folk, L. (1992). Teaching social skills to students with autism to increase peer interactions in an integrated first-grade classroom. *Journal of Applied Behavior Analysis, 25*(2), 281-288.
- Kanner, L. (1943). Autistic disturbance of affective contact. *Nervous Child, 2*, 217–250.
- Kaplan, R. S. (2005). An Analysis of Music Therapy Program Goals and Outcomes for Clients with Diagnoses on the Autism Spectrum. *Journal of Music Therapy, 42*(1), 2-9.
- Katagiri, J. K. (2009). The Effect of Background Music and Song Texts on the Emotional Understanding of Children with Autism. *Journal of Music Therapy, 46*(1), 15-31.
- Kazdin, Alan (1982). *Single-Case Research Designs*. New York: Oxford University Press.
- Kennedy, C. H. (2005). *Single-case designs for educational research*. Prentice Hall.
- Kern, P., & Aldridge, D. (2006). Using embedded music therapy interventions to support outdoor play of young children with autism in an inclusive community-based child care program. *Journal of Music Therapy, 43*(4), 270-294.

- Kishida, Y., & Kemp, C. (2009). The engagement and interaction of children with autism spectrum disorder in segregated and inclusive early childhood center-based settings. *Topics in Early Childhood Special Education, 29*(2), 105-118.
- Koegel, L. K., Koegel, R. L., Hurley, C., & Frea, W. D. (1992). Improving social skills and disruptive behavior in children with autism through self-management. *Journal of Applied Behavior Analysis, 25*(2), 341-353.
- Koegel, R., Kim, S., Koegel, L., & Schwartzman, B. (2013). Improving socialization for high school students with ASD by using their preferred interests. *Journal of autism and developmental disorders, 43*(9), 2121-2134.
- Kohler, F. W., Strain, P. S., Hoyson, M., Davis, L., Donina, W. M., & Rapp, N. (1995). Using a Group-Oriented Contingency to Increase Social Interactions between Children with Autism and Their Peers A Preliminary Analysis of Corollary Supportive Behaviors. *Behavior Modification, 19*(1), 10-32.
- LaGasse, A. B. (2014). Effects of a Music Therapy Group Intervention on Enhancing Social Skills in Children with Autism. *Journal of music therapy, 51*(3), 250-275. doi: 10.1093/jmt/thu012
- Lewin, K. (1958). *Group Decision and Social Change*. New York: Holt, Rinehart and Winston. p. 201.
- Lim, H. A. (2010). Effect of “Developmental Speech and Language Training Through Music” on Speech Production in Children with Autism Spectrum Disorders. *Journal of Music Therapy, 47*(1), 2-28.
- Lim, H. A., & Draper, E. (2011). The Effects of Music Therapy Incorporated with Applied Behavior Analysis Verbal Approach for Children with Autism Disorder. *Journal of Music Therapy, 48*(4), 532-550.
- Lu, L., Tan, Y., & Chen, L. (2008). The influence of music application on the anxiety and depress of ICU patient. *Journal of Nursing, 15* (6), 81-83.
- Lu, Y. (2014). Current Situation of the Implementation of Music Education and Therapy for Children with Special needs In Selected regions of Czech Republic and China. *Proceedings of the International Scientific Conference on European Pedagogy Forum 2014, Vol. IV, 364-371*.

- Lu, Y. (2015). Music Therapy in China. *Journal of Exceptional People*, Vol.1, No. 6: 83-88
- Ma, H. (2010). The review of the development of music therapy in China. *Fujian Forum*, 263-264.
- Ma, Q., Weng, J., & Li, Q. (2006). Research on Chinese traditional music Therapy. *Psychological Science*, 6, 1470-1473.
- Magiati, I., Moss, J., Yates, R., Charman, T., & Howlin, P. (2011). Is the Autism Treatment Evaluation Checklist a useful tool for monitoring progress in children with autism spectrum disorders? *Journal of Intellectual Disability Research*, 55(3), 302–312. doi: 10.1111/j.1365-2788.2010.01359.x
- McCord, K. (2006). Book review: Music in Special Education. *Music Educators Journal*, 93(2), 20-20.
- McCord, K., & Watts, E. H. (2006). Collaboration and Access for Our Children: Music Educators and Special Educators Together. (Cover story). *Music Educators Journal*, 92(4), 26-33.
- McNiff, J., & Whitehead, J. (2011). *All you need to know about action research*. Sage Publications. pp.3-5
- Merriam A.(1964). *The anthropology of music* (219-227). Evanston,IL: Northwestern University Press.
- Ministry of Education of PRC (2010). *National Medium and Long-term Educational Reform and Development Plan*.
- Ministry of Education of PRC (2012). *Strengthening the Team Construction of Teachers in Special Education*.
- Ministry of Education, State Development and Reform Commission, Ministry of Civil Affairs, Ministry of Finance, Ministry of Human Resources and Social Security, Health and Family Planning Commission, & China Disabled Persons Federation (2013). *Special Education Promotion Plan (2014 - 2016)*. Retrieved from [http://www.mof.gov.cn/zhengwuxinxi/zhengcefabu/201401/t20140121\\_1037574.htm](http://www.mof.gov.cn/zhengwuxinxi/zhengcefabu/201401/t20140121_1037574.htm).
- Moore, C., & Dunham, P. J. (1995). Joint attention: Its origins and role in development. *Lawrence Erlbaum Associates Inc*.

- Montgomery, C. (2002). Role of dynamic therapy in psychiatry. *Advances in Psychiatric Treatment*, 8, 34-41.
- Moran, D.J. & Tai, W. (2001). Reducing Biases in Clinical Judgment with Single-Subject Treatment Design. *The Behavior Analyst Today*, 2(3), 196–206
- Mundy, P. (1995). Joint attention and social-emotional approach behavior in children with autism. *Development and Psychopathology*, 7.1 (Emotions in Developmental Psychopathology), 63-82.
- National Dissemination Center for Children with Disabilities, “Emotional Disturbance,” June 2010, <http://www.nichcy.org/Disabilities/Specific/Pages/EmotionalDisturbance.aspx> (accessed June 9, 2011).
- National People’s Congress of PRC (2008). *The Law of the People’s Republic of China on the Protection of Disabled Persons*. Retrieved from <http://baike.baidu.com/view/84101.htm>.
- Nelson, D. L., Anderson, V. G., & Gonzales, A. D. (1984). Music activities as therapy for children with autism and other pervasive developmental disorders. *Journal of Music Therapy*, 21(3), 100-116.
- Ning, X. Research on the influence of Orff music therapy on the work memory and attention of children with Down’s syndrome. Master’s Thesis, 2010.
- Nolen-Hoeksema, S. (2011). *Abnormal psychology* (5th ed.). New York, NY: The McGraw-Hill Companies, Inc.
- Nordlund, M. (2006). Finding a Systemized Approach to Music Inclusion. *General Music Today*, 19(3), 13-16.
- Nordoff, P., & Robbins, C. (1968). Improvised music as therapy for autistic children. *Music in therapy*, 191-193.
- Oasi, O., Raglio, A., & Traficante, D. (2011). Autism and music therapy. Intersubjective approach and music therapy assessment. *Nordic Journal of Music Therapy*, 20(2), 123-141. doi: 10.1080/08098130903377399
- Odom, S. L., & Strain, P. S. (1986). A comparison of peer-initiation and teacher-antecedent interventions for promoting reciprocal social interaction of autistic preschoolers. *Journal of applied behavior analysis*, 19(1), 59-71.

- Osterling, J., & Dawson, G. (1994). Early recognition of children with autism: a study of first birthday home videotapes. *Journal of Autism & Developmental Disorders*, 24(3), 247-257.
- Palisca, C. V. (1985). *Humanism in Italian Renaissance musical thought*. Yale University Press.
- Porter, S., Holmes, V., McLaughlin, K., Lynn, F., Cardwell, C., Braiden, H.-J., . . . Rogan, S. (2012). Music in mind, a randomized controlled trial of music therapy for young people with behavioural and emotional problems: study protocol. *Journal of Advanced Nursing*, 68(10), 2349-2358. doi: 10.1111/j.1365-2648.2011.05936.x
- Reason, P., & Bradbury, H. (Eds.). (2001). *Handbook of action research: Participative inquiry and practice*. Sage.
- Reschke-Hernandez, A. E. (2011). History of Music Therapy Treatment Interventions for Children with Autism. *Journal of Music Therapy*, 48(2), 169-207.
- Reschke-Hernández, A. E. (2012). Music-Based Intervention Reporting for Children with Autism: Implications for Music Therapy Publication Guidelines. *Music Therapy Perspectives*, 30(2), 167-175. doi: 10.1093/mtp/30.2.167
- Robb, S. L., & Carpenter, J. S. (2009). Treatment approaches for autism: Evaluating options and making informed choices. In D. Zager (Ed.), *Autism spectrum disorders: Identification, education, and treatment* (pp. 515-535). Mahwah, NJ: Lawrence Erlbaum Associates.
- Roth, J. D. (2016). *Group psychotherapy and recovery from addiction: Carrying the message*. Routledge.
- Russell-Bowie, D. (2010). A Ten Year Follow-Up Investigation of Preservice Generalist Primary Teachers' Background and Confidence in Teaching Music. *Australian Journal of Music Education*(2), 76-86.
- Salvador, K. (2013). Inclusion of People with Special Needs in Choral Settings: A Review of Applicable Research and Professional Literature. *UPDATE: Applications of Research in Music Education*, 31(2), 37-44.
- Dunbar, R. I. M., Kaskatis, K., MacDonald, I., & Barra, V. (2012). Performance of music elevates pain threshold and positive affect: Implications for the evolutionary function of music. *Evolutionary Psychology*, 10(4), 688-702.

- Ellis, R. J., & Thayer, J. F. (2010). Music and autonomic nervous system (dys)function. *Music Perception, 27*(4), 317-326. doi: 10.1525/mp.2010.27.4.317
- Fukui H, Toyoshima K. (2008). Music facilitate the neurogenesis, regeneration and repair of neuron. *Med Hypotheses . 71*:765–9. doi:10.1016/j.mehy.2008.06.019
- Hargreaves, D. J., & North, A. C. (1999). The functions of music in everyday life: Redefining the social in music psychology. *Psychology of music, 27*(1), 71-83.
- Hegde, S. (2014). Music-based cognitive remediation therapy for patients with traumatic brain injury. *Frontiers in Neurology, 5*, 1-7. doi: 10.3389/fneur.2014.00034
- Hurt CP, Rice RR, McIntosh GC, Thaut MH. (1998). Rhythmic auditory stimulation in gait training for patients with traumatic brain injury. *J Music Ther 35*:228–41. doi:10.1093/jmt/35.4.228
- Hurt-Thaut C. (2009). Clinical practice in music therapy. In Hallam, S., Cross, I., & Thaut, M. H. (Eds.), *The Oxford handbook of music psychology* (24-34). New York: Oxford University Press.
- James J. (1993). *The music of the spheres: music, science and the natural order of the universe*. London: Little, Brown and Co.
- Merriam A. (1964). *The anthropology of music* (219-227). Evanston, IL: Northwestern University Press.
- National Dissemination Center for Children with Disabilities, “Emotional Disturbance,” June 2010, <http://www.nichcy.org/Disabilities/Specific/Pages/EmotionalDisturbance.aspx> (accessed June 9, 2011).
- Porter, S., Holmes, V., McLaughlin, K., Lynn, F., Cardwell, C., Braiden, H.-J., . . . Rogan, S. (2012). Music in mind, a randomized controlled trial of music therapy for young people with behavioural and emotional problems: study protocol. *Journal of Advanced Nursing, 68*(10), 2349-2358. doi: 10.1111/j.1365-2648.2011.05936.x
- Schäfer, T., Sedlmeier, P., Städtler, C., & Huron, D. (2013). The psychological functions of music listening. *Frontiers in Psychology, 4*(AUG). doi: 10.3389/fpsyg.2013.00511
- Schlaug G. (2009). Music, musicians, and brain plasticity. In Dimitriadis, T., & Smeijsters, H. (2011). *Autistic spectrum disorder and music therapy: theory*

- underpinning practice. *Nordic Journal of Music Therapy*, 20(2), 108-122. doi: 10.1080/08098131.2010.487647
- Shi, Y. & Huang, X. (2011). Research on the effect of recreation method of music therapy for children with autism. *Chinese Journal of Special Education*, 137(11).
- Simpson, K., & Keen, D. (2011). Music Interventions for Children with Autism: Narrative Review of the Literature. *Journal of Autism & Developmental Disorders*, 41(11), 1507-1514. doi: 10.1007/s10803-010-1172-y
- Slavson, S. R., & Schiffer, M. (1975). *Group psychotherapies for children: A text book*. New York: International Universities Press.
- Sparshott, F., & Goehr, L. (2001). Philosophy of music: early Christian thought; medieval thought. *The new Grove dictionary of music and musicians*, 19, 608-611.
- Sparshott, F. E. (1998). *The future of aesthetics: The 1996 Ryle lectures*. University of Toronto Press.
- Stewart, R. W. (2002). Combined efforts: Increasing social-emotional communication with children with autistic spectrum disorder using psychodynamic music therapy and division TEACCH communication programme. In A. Davies & E. Richards (Eds.), *Music therapy and group work: Sound company*. Essica Kingsley Publishers.
- Strain, P. S. (1983). Generalization of autistic children's social behavior change: Effects of developmentally integrated and segregated settings. *Analysis and intervention in developmental disabilities*, 3(1), 23-34.
- Strain, P. S., Kohler, F. W., Storey, K., & Danko, C. D. (1994). Teaching preschoolers with autism to self-monitor their social interactions: An analysis of results in home and school settings. *Journal of Emotional and Behavioral Disorders*, 2(2), 78-88.
- Taylor, B. A., & Levin, L. (1998). Teaching a student with autism to make verbal initiations: Effects of a tactile prompt. *Journal of Applied Behavior Analysis*, 31(4), 651-654.
- Thaut M. H (1999). Music therapy for children with physical disabilities. In WB Davis, KE Gfeller and MH Thaut, eds, *An introduction to music therapy, theory and practice*, 148-162. McGraw-Hill, Boston, MA.
- Thaut, M. H. (2000). *A scientific model of music in therapy and medicine*. San Antonio, TX: The University of Texas at San Antonio.

- Thompson, C.K. (1986). Flexibility of Single-subject Experimental Designs. Part III: Using Flexibility to Design or Modify Experiments. *The Journal of Speech and Hearing Disorders*, 51(3), 214–25
- Thompson, G. A., McFerran, K. S., & Gold, C. (2014). Family - centred music therapy to promote social engagement in young children with severe autism spectrum disorder: a randomized controlled study. *Child: Care, Health and Development*, 40(6), 840-852. doi: 10.1111/cch.12121
- Torbert, W. R. (1981). Why Educational Research Has Been So Uneducational: The Case for a New Model of Social Science Based on Collaborative Inquiry. In Reason, P. (Ed.), *Human inquiry in action: Developments in new paradigm research*(Chapter 11). John Wiley & Sons, Ltd.
- UNESCO (1994). *The Salamanca Statement and Framework for Action on Special Needs Education*. Retrieved from [http://www.unesco.org/education/pdf/SALAMA\\_E.PDF](http://www.unesco.org/education/pdf/SALAMA_E.PDF).
- UNESCO, UNDP, UNFPA, UNHCR, UNICEF, UN Women, & World Bank Group (2015). *Education 2030 and Framework for Action*. Retrieved from [http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ED/ED\\_new/pdf/FFA-ENG-27Oct15.pdf](http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ED/ED_new/pdf/FFA-ENG-27Oct15.pdf)
- Unkefer, P., Alvarez, M., & Unkefer, C. (2000). Characterization of propane monooxygenase: initial mechanistic studies. *Office of Scientific & Technical Information Technical Reports*.
- Wang, X., & Sun, J. (2002). *Modern Psychiatry*. Beijing: People's Military Medical Press, 1055.
- Webber, J. 1997. Responsible inclusion: Key components for success. In *Inclusion strategies for students with learning and behavioral problems*, ed. P. Zionts, 4–29. Austin, TX: Pro-ed.
- Werbner, N. R. (1968). music therapy in a children's day-treatment center. *Music in Therapy*, 195-196.
- Wigram, T., & Gold, C. (2006). Music therapy in the assessment and treatment of autistic spectrum disorder: clinical application and research evidence. *Child: Care, Health & Development*, 32(5), 535-542. doi: 10.1111/j.1365-2214.2006.00615.x

- Wilmshurst, L. (2005). *Essentials of child psychopathology*. Hoboken, NJ: John Wiley & Sons, Inc.
- Winzer, M. A. 1993. *The history of special education: From isolation to integration*. Washington, DC: Gallaudet University Press.
- Wollheim R (1980). *Art and its objects*, 2nd edn. Cambridge: Cambridge University Press.
- Xiang, C., Guo, Q. & Liao, J. (2006). Research on the treatment effect in patients with malignant tumor depression with the five-elements and five notes therapeutic method combined with musical electro-therapy. *Chinese Journal of Nursing*, 41(11), 969-972.
- Xie, H. (2009). Study on the autonomic nerve physiology reaction with the influence of different music. *The 9th Institute Proceedings of CMTA*, 48-53.
- Yalom, I. D., & Leszcz, M. (2005). *Theory and practice of group psychotherapy*. Basic books.
- Yang, Y. (2008). Regimen and healing with the five-element music. *Chinese Health Care and Nutrition*, (9), 92 -94.
- Yao, C. (2007). The role of music therapy in education and rehabilitation of mentally retarded children. *Chinese Journal of Special Education*, (5).
- York, J. L., and M. C. Reynolds. 1996. Special education and inclusion. *In Handbook of research on teacher education*, ed. J. Sikula, 820–36. New York: Simon and Schuster/Macmillan.
- Zhang, H., & Zhou, W. (2004). The role of music therapy in the education for mentally retarded children. *Journal of the Central Conservatory of Music*, 94, 1.
- Zhang, X. (2006). Observations on 29 cases in the dialectical therapy of type II diabetes mellitus with the five-element music therapy method. *Journal of Chinese Traditional and Western medicines*, 7 (2), 161 - 162.
- Zhang, Y. (2006). Discussion of several issues in the process of music therapy for children with autism. *Journal of the Central Conservatory of Music*, 2.
- Zhou, W., He, G. & Tang, S. (2008). Research on the influence of the degree of prenatal anxiety with music therapy. *Asia-Pacific Traditional Medicine*, 4 (5), 23-24.

Zhou, X. (2001). Research on the variation of the electric current value in the process of the music of Gong mode and Yu mode be used to slow down the stress. *Full database of Chinese excellent doctoral and master's Thesis*, (01).

## Appendix A Autism Treatment Evaluation Checklist (ATEC)

Name of Child:

SEX:

Age:

Date of Birth:

Form completed by and relationship:

Date of Completion:

1	Speech/Language/Communication	Not true 2	Somewhat true 1	Very True 0	
1.1	Knows own name				
1.2	Responds to 'No' or 'Stop'				
1.3	Can follow some commands				
1.4	Can use one word at a time (No, Eat, Water, etc.)				
1.5	Can use 2 words at a time (Don't want, Go home)				
1.6	Can use 3 words at a time (Want more milk)				
1.7	Knows 10 or more words				
1.8	Can use sentences with 4 or more words				
1.9	Explains what he/she wants				
1.10	Asks meaningful questions				
1.11	Speech tends to be meaningful/relevant				
1.12	Often uses several successive sentences				
1.13	Carries on fairly good conversation				
1.14	Has normal ability to communicate for his/her age				
2	Sociability: Not descriptive	Not descriptive 0	Somewhat descriptive 1	Very descriptive 2	

2.1	Seems to be in a shell – you cannot reach him/her				
2.2	Ignores other people				
2.3	Pays little or no attention when addressed				
2.4	Uncooperative and resistant				
2.5	No eye contact				
2.6	Prefers to be left alone				
2.7	Shows no affection				
2.8	Fails to greet parents				
2.9	Avoids contact with others				
2.10	Does not imitate				
2.11	Dislikes being held/cuddled				
2.12	Does not share or show				
2.13	Does not wave ‘bye bye’				
2.14	Disagreeable/not compliant				
2.15	Temper tantrums				
2.16	Lacks friends/companions				
2.17	Rarely smiles				
2.18	Insensitive to other's feelings				
2.19	Indifferent to being liked				
2.20	Indifferent if parent(s) leave				
3	Sensory/Cognitive Awareness	Not descriptive 2	Somewhat descriptive 1	Very descriptive 0	
3.1	Responds to own name				
3.2	Responds to praise				
3.3	Looks at people and animals				
3.4	Looks at pictures (and T.V.)				
3.5	Does drawing, coloring, art				

3.6	Plays with toys appropriately				
3.7	Appropriate facial expression				
3.8	Understands stories on T.V.				
3.9	Understands explanations				
3.10	Aware of environment				
3.11	Aware of danger				
3.12	Shows imagination				
3.13	Initiates activities				
3.14	Dresses self				
3.15	Curious, interested				
3.16	Venturesome - explores				
3.17	“Tuned in” — Not spacey				
3.18	Looks where others are looking				
4	Health/Physical/Behavior	Not a problem 0	Minor problem 1	Moderate problem 2	Serious problem 3
4.1	Bed-wetting				
4.2	Wets pants/diapers				
4.3	Soils pants/diapers				
4.4	Diarrhea				
4.5	Constipation				
4.6	Sleep problems				
4.7	Eats too much/too little				
4.8	Extremely limited diet				
4.9	Hyperactive				
4.10	Lethargic				
4.11	Hits or injures self				
4.12	Hits or injures others				
4.13	Destructive				
4.14	Sound-sensitive				

4.15	Anxious/fearful				
4.16	Unhappy/crying				
4.17	Seizures				
4.18	Obsessive speech				
4.19	Rigid routines				
4.20	Shouts or screams				
4.21	Demands sameness				
4.22	Often agitated				
4.23	Not sensitive to pain				
4.24	“Hooked” or fixated on certain objects/topics				
4.25	Repetitive movements (stimming, rocking, etc.)				

Reference values of ATEC scores

Level	Subscale I	Subscale II	Subscale III	Subscale IV	Subscale totals
	Speech/ Language/ Communication	Sociability	Sensory/ Cognitive Awareness	Health/ Physical/ Behavior	
Mild	Range:0-28	Range: 0-40	Range: 0-36	Range: 0-75	Range : 0-180
0-9	0-2	0-4	0-5	0-8	0-30
10-19	3-5	5-7	6-8	9-12	31-41
20-29	6-7	8-10	9-11	13-15	42-50
30-39	8-10	11	12-13	16-18	51-57
40-49	10-12	12-13	14-15	19-21	58-64
50-59	13-15	14-15	16-17	22-24	65-71
60-69	16-19	16-18	18-19	25-28	72-79
70-79	20-21	19-21	20-21	29-32	80-89
80-89	22-24	22-25	22-25	33-39	90-103
90-99	25-28	26-40	26-36	40-75	104-179
Severe					

**Appendix B Objective Evaluation**

<b>Objective Evaluation</b>						
<b>Date:</b>			<b>Evaluator Signature:</b>			
<p><b>CODE</b>            √+ Consistently Observed            √ Observed When Cued (Physical, Verbal, Visual)            √- Inconsistently Observed            NO Not Observed            NA Not Applicable</p>						
<b>Format</b>	<b>Objectives</b>	<b>Long</b>	<b>Heng</b>	<b>Min</b>	<b>Chen</b>	<b>Yu</b>

**Appendix C Interview outline for class teacher and guardians**

Name of Child		Form completed by and relationship		Date	
Cognition/ Emotion	( Understanding of the rules? Imitation ability? Attitude to new components? Emotion? )				
Language/ Communication	( New words? New sentences? Long sentences? Description? )				
Sociability	( Joint attention? Sharing? Interaction? )				
Motor	( Gross motor? Fine motor? Coordination? Balance? )				
Musical performance	( Favorite style? Rhythm? Pitch? Listening? )				
Others					

#### **Appendix D Interview outline for therapist**

1. Reaction of the therapist to the various group members.
2. Interpretation of children's behavior.
3. Issues that the therapist perceives in connection to the progress or lack of progress on the part of a child in the group.
4. Necessary modification made in the session that may be considered in subsequent session planning.
5. Issues related to group dynamics.
6. Realization of a link from theory to practice.
7. Other suggestions