Title of the Paper

A Pilot Study on Measuring Musical Aptitudes of Third- to Sixth-Grade Students with Special Needs in Taiwan

Description for Symposium Theme and Key Questions

This session will address the diagnostic results and process of using Gordon's Intermediate Measures of Music Audiation (IMMA) and Musical Aptitude Profile (MAP) to measure tonal and rhythmic aptitudes for 30 students with special needs in third through sixth grades in Taipei, Taiwan. Compared to norms, this study will share the practices for assessment in music education across diverse educational system. Meanwhile, the research priorities will focus on the effects of demographic characteristics of children with special needs on musical potential, especially in an Asian country with different cultures other than Westerns. The difficulties to administer musical tests for children with special needs will also be presented. This session will share the strategies and techniques for practitioners to learn how to make an accommodation during testing and enhance their ability to assess student music potential and learning most effectively.

Extended Abstracts

（中文補充）

根據 Gordon (1987) 的觀點，音樂性向是與生俱來、未經正式音樂教育而自然發展的，同時受到天賦與後天環境的雙重影響。音樂性向測驗可以用來探測兒童的音樂潛能，然而每一個孩子無論音樂性向程度爲何，都將受益於有建構或無建構之非正式的音樂引導以及正式的音樂教學。

研究者在多年從事特殊兒童音樂治療與教學的經驗中發現，許多特殊兒童的音樂優勢不受障礙類型或嚴重程度的影響，但目前以一般兒童爲主的音樂性向測量文獻，很少提及與特殊兒童音樂性向相關的研究結果。有鑒於近年來特殊教育政策持續朝向融合教育的理念發展，考量特殊兒童的特質並應用適合的音樂媒介也受到重視，特教或音樂老師必須爲孩子提供多元的評量與教學策略、並適時調整孩子的教育方案，因此了解特殊兒童的音樂性向與能力、並依此提供適性的音樂教學已逐漸成爲特教領域強調的課題。是故本研究將以台北市某國小三到六年級資源班與特教班共30位兒童爲對象進行前導研究，以Gordon所發展、適用於一到四年級兒童的「音樂性向中級聽力測驗」（Intermediate Measures of Music Audiation，簡稱IMMA）做爲測量的工具，並從中選取測驗PR（percentile rank）值達85%的兒童繼續完成難度更高、也相當周全的「音樂性向測驗」（Musical Aptitude Profile，簡稱MAP）。本研究亟欲藉此了解這30位兒童之音高（tonal）與節奏（rhythmic）性向的潛在能力，並進一步探究這些兒童之內在、外在背景因素是否對其音樂性向造成影響，同時就特殊兒童完成測量可能遭遇的困難及施測人員應具備的能力及調整方法等提出研究的發現與建議，做爲未來大樣本研究之參照。

Main Purpose

The main purpose of this study is to explore musical potential by using Gordon's IMMA (Intermediate Measures of Music Audiation) and MAP (Musical Aptitude Profile) for 30 students with special needs in third through sixth grades in Taipei, Taiwan.

Sub-purposes and Research Questions

The sub-purposes and each research questions are as follows:

1. The nature and extent of tonal and rhythmic aptitudes in IMMA and MAP for third- to sixth-grade students with special needs.
    1-1 What is the nature and extent of demographic characteristics of students with special needs?
    1-2 What is the nature and extent of tonal and rhythmic aptitudes in IMMA?
    1-3 What is the nature and extent of tonal and rhythmic aptitudes in MAP?
2. The effects of demographic characteristics of students with special needs on their tonal and rhythmic aptitudes in IMMA.
    2-1 How are the effects of demographic characteristics, such as special education placements, severity and types of disability, health condition, music training and so on, on tonal and rhythmic aptitudes in IMMA?
3. The process and difficulties to administer musical tests for students with special needs.
    3-1 What are the difficulties to administer musical tests for students with special needs?
    3-2 What accommodations must be made for practitioners to learn to administer musical tests for students with special needs?

Content

Edwin E. Gordon has spent approximately the last 30 years exploring music aptitude in individuals and developed Intermediate Measures of Music Audiation (IMMA) and Musical Aptitude Profile (MAP) (Cutietta, 1991; Gordon, 1986, 1995). Although there is no prior music instruction needed for children taking the tests, it is mostly used by music teachers to assess their normal students' individual needs and has hardly found employed for children with special needs. However, Gordon (1999) addressed that music aptitude is a product of both innate potential and early environmental experiences. Crouch's (2005) research also found that musical movement activities have a positive effect on developmental music aptitude for 3 learning-disabled students by testing Primary Measures of Music Audiation (PMMA). Can children with special needs be expected to have equivalently musical potential if compared to norms? I developed an interest in this issue.

The purpose of this study was to explore musical potential by using Gordon's IMMA and MAP for 30 students with special needs in third through sixth grades in Taipei, Taiwan. The diagnostic results and process to measure tonal and rhythmic aptitudes were addressed. The researcher intended to find out the nature and extent of students' tonal and rhythmic aptitudes, the effects of demographic characteristics (such as special education placements, severity and types of disability, health condition, music training and so on) on students' tonal and rhythmic aptitudes, as well as the process and difficulties to administer musical tests.

This study was considered to be a pilot study. There were two stages in the process. In the stage one, all students completed a self-designed survey of demographic

characteristics and IMMA. Students whose composite percentile rank (PR) made over 85% would continue to receive MAP in the stage two. The process was recorded and narrated. The difficulties and problems of implementation were also discussed.

The findings of this study are as follows:

1. The subjects of this study were 30 students (22 male and 8 female) with various disabilities, including 7 with attention deficit hyperactivity disorder (ADHD), 3 with autism, 2 with emotional and behavioral disorders, 6 with learning disabilities, 7 with intellectual disabilities, 2 with multiple disabilities, 1 with health impairments, 1 with communication disorders and 1 with visual impairments. All students were chose by purposive sampling from an elementary school in Taipei. A total of 22 students attended resource rooms and 8 students attended self-contain special classrooms (see Figure 1). The average age of all students was 10.4 years old, with the range of 9 years 0 months to 12 years 9 months. One half of students (N=15) reported having attention problem and about 1/3 (N=9) of students having hyperactivity problem. Four children took piano lessons, one with 18-month training and three with training less than 6 months.
2. Compared to IMMA percentile norms, there were 8 students with the composite PR in 0, 11 students in between 1 to 50, and 11 students in between 70 to 95 (see Figure 2). Four students made PR over 85%, in which the best one having PR 99 of tonal test and PR 85 of rhythm test in MAP.
3. Students attending in resource rooms had higher IMMA scores and better PR than ones attending in self-contain special classrooms. There were significant differences in tonal and rhythmic aptitudes of students from different placements (Tonal Test t=6.098,

$p<.001$; Rhythm Test $t=6.144$, $p<.001$; Composite $t=6.266$, $p<.001$) and with different types of disabilities (Rhythm Test $F=2.993$, $p<.01$; Composite $F=2.716$, $p<.01$) (see Table 1 & 2). Other than that, there were no statistically significant differences found between students' any other demographic characteristics and the tonal and rhythmic tests scores of IMMA.

4. Most of students needed to take longer time to complete tests and occasionally need a short break because of their short attention and limited patience. It is suggested that practitioners must have fully knowledge regarding characteristics of students with special needs, and be able to make classroom managements for students to learn self control their own emotion and behavior appropriately. In order to enhance the ability to assess music potential and learning most effectively for these students in the future, practitioners need to learn the strategies and techniques in special education to deal properly with all kinds of complicated situations for students with special needs.

References

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Appendix

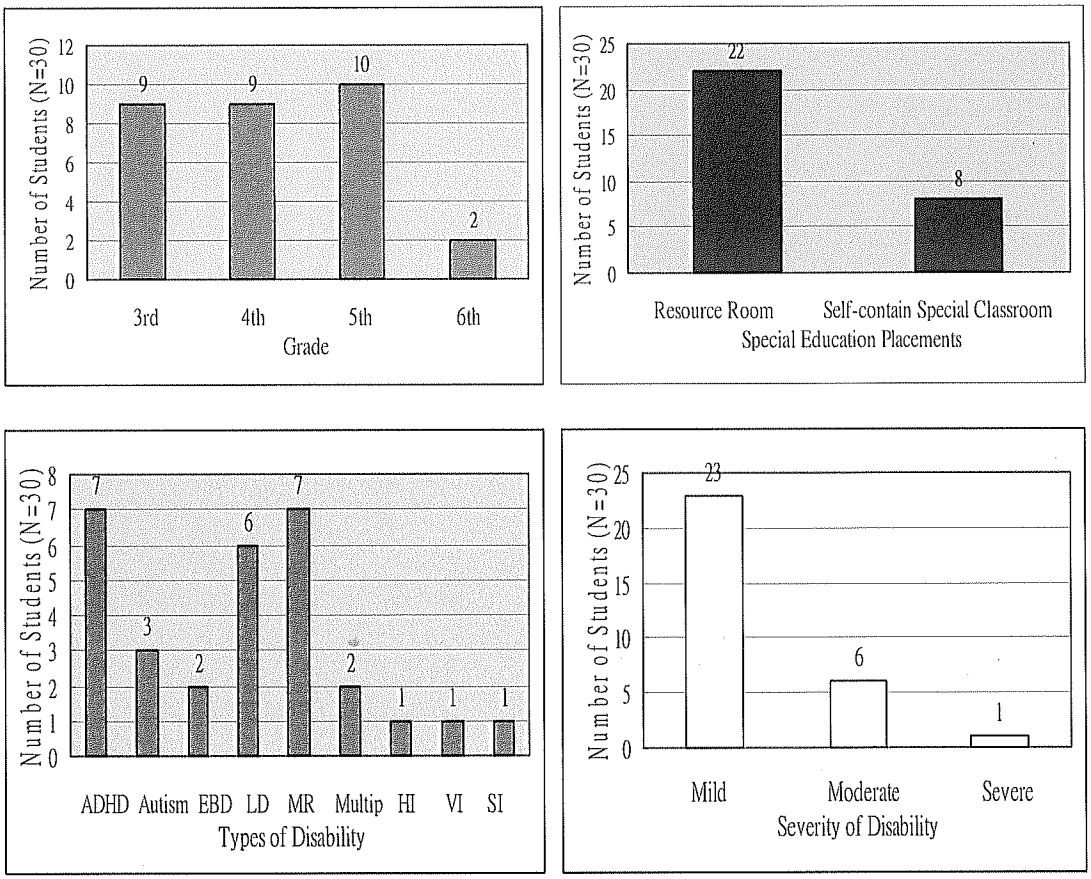
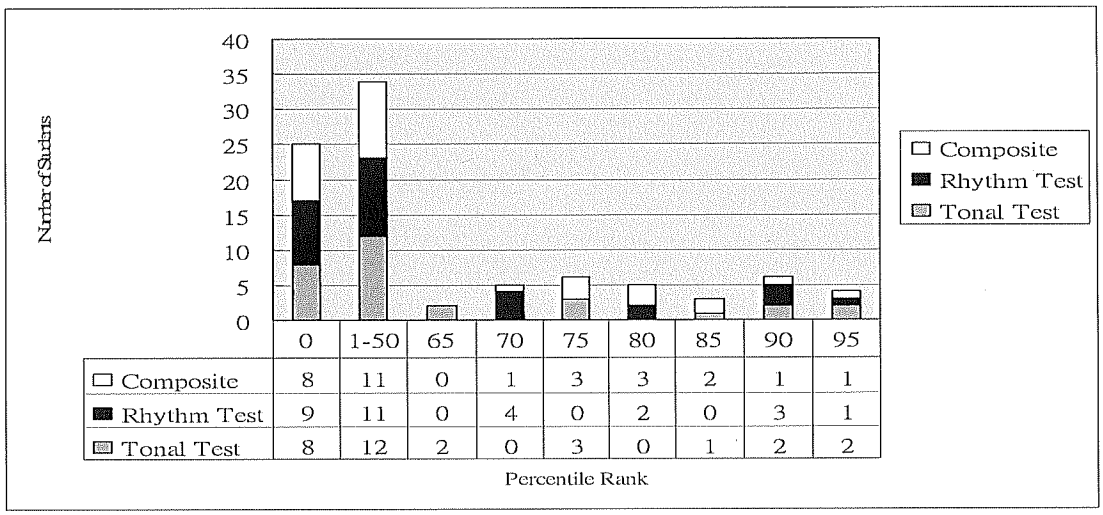


FIGURE 1. Number of Students in Demographic Backgrounds



	0	1-50	65	70	75	80	85	90	95
Composite	8	11	0	1	3	3	2	1	1
Rhythm Test	9	11	0	4	0	2	0	3	1
Tonal Test	8	12	2	0	3	0	1	2	2

FIGURE 2. Students' Tonal Test, Rhythm Test, and Composite PR in IMMA and MAP

TABLE 1. *t* Test for Subjects' Special Education Placements in Tonal Test, Rhythm Test and Composite (*N*=30)

Variable	Resource Room		Self-contain		*t*
	M	*SD*	*M*	*SD*	
Tonal Test	51.36	32.89	4.38	9.04	6.098***
Rhythm Test	49.77	32.90	3.75	7.44	6.144***
Composite	49.14	34.84	1.88	3.72	6.266***

*** $p<.001$

TABLE 2. ANOVA for Subjects' Types of Disability in Tonal Test, Rhythm Test and Composite

Variable	*SS*	*df*	*MS*	*F*
Tonal Test				
Between groups	13735.310	6	2289.218	2.340
Within groups	22500.857	23	978.298	
Total	36236.167	29		
Rhythm Test				
Between groups	15580.357	6	2596.726	2.993**
Within groups	19957.143	23	867.702	
Total	35537.500	29		
Composite				
Between groups	16042.705	6	2673.784	2.716**
Within groups	22642.762	23	984.468	
Total	38685.467	29		

** $p<.01$