ADOLESCENTS' MOTIVATION TO STUDY MUSIC AS COMPARED TO OTHER SCHOOL SUBJECTS: A SINGAPOREAN PERSPECTIVE

BY

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DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Education in Music Education
in the Graduate College of the
University of Illinois at Urbana-Champaign, 2011

Urbana, Illinois

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ABSTRACT

The purpose of this study was to examine the expectancies and task values held by Singaporean adolescents about learning music and other school subjects (English, Mathematics, Science, Physical Education, and Art) across Primary 6, Secondary 1, and Secondary 2 levels (Grades 6 to 8). The data was analyzed according to gender and music student status (*music students*, *high aspiring non-music students*, *low aspiring non-music students*) in order to provide suggestions that would foster music instruction within the Singaporean school system.

A total of n = 1,733 participants from three primary and four secondary schools in Singapore completed a web-based survey questionnaire that was grounded in the Eccles and Wigfield expectancy-value theoretical framework as adapted in a series of studies by McPherson and his colleagues. The study found that music and non-music students held different perceptions of competence and valuing about school music. School music was generally less valued by students, particularly the low aspiring non-music students, when compared to the other school subjects. In addition, it was found that valuing of music among older adolescents was lower than their younger counterparts. Finally, the study found that students' perceived usefulness of school music predicted their intention to enroll in instrumental music instruction outside of school.

Implications arising from the study highlight the need for the music profession to evolve students' negative attitudes towards school music. Providing students with positive classroom musical experiences and adopting differential teaching approaches to cater to students' varied motivational profiles towards studying music in school were suggested as ways of raising the status of school music education. The need to assert and substantiate the role music can and should play in the education of all children is a continuing challenge within the Singapore

education system, but one that must be addressed if school music is to become a more prominent subject within schools.

ACKNOWLEDGEMENTS

My utmost gratitude to my research director, Professor Gary McPherson for his expertise, encouragement, and constant availability throughout my studies. Gary, you have also been a perfect mentor to me, being kind, approachable, understanding of my feelings, and tolerant of my shortcomings. I would also like to thank Professor Louis Bergonzi, Associate Professor Gregory DeNardo, and Assistant Professor Joseph Robinson for their guidance, time, knowledgeable support, and contributions as members of my examination committee. I really appreciate their invaluable comments and advice towards my dissertation. Thank you.

I am extremely grateful to the Ministry of Education, Singapore, for granting me leave from work and partially sponsoring my master and doctoral studies at the University of Illinois at Urbana-Champaign. To my bosses, Mrs. Tan Wie Pin and Mr. Ong Kian Choon, thank you. I also extend my appreciation and gratitude to principals of the participating schools for their support towards my study and for allowing me the use of their school computer laboratories for the study. My gratitude also goes to music teachers, staff, and students of the participating schools. Also, special thanks to the following people for their assistance and support towards my study: Dr. Chia Wei Khuan, Chua Siew Ling, Prof. Ho Hwee Long, Ho Huiping, Dr. Ho Shen Yong, Dr. Joshua Goh, Justin Goh, Professor James Keene, Lucinda Lawrence, Mindy Lin, Lum Pui Yee, Dalvey Neo, Lawrence Neo, Jennifer Philips, Jeannette Soh, ME5 Philip Tng, Dr. Jamie Tang, and Prof. Matthew Thibeault. Thank you very much.

Last, but not least, my deepest love and gratitude to my family. My mum, Ivan, Connie, and William for your quiet but strong support towards my pursuing of the doctoral degree. And most of all, to my wife, Ting Lee, thank you for your understanding, sacrifices, and for taking excellent care of our wonderful children Horn Ray and Mi Yo throughout the period of my studies. Finally, this dissertation is dedicated in memory of my beloved grandma and papa.

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CHAPTER 1: INTRODUCTION

The Singapore government's vision for education is outlined in *Thinking Schools, Learning Nation* (Ministry of Education, 2008a). This document articulates ways for preparing generation of thinking and committed citizens who are capable of contributing towards the nation's continued growth and prosperity. The central plank in the government's policy is to nurture each child's full potential so that all children can discover their talents, and develop a passion for life-long learning. Formal education in Singapore aims to provide all students with a holistic and broad based education that incorporates development across a range of physical, cognitive, social, moral, and aesthetic domains (Hodge, 2008). The school curriculum comprises literacy in English and mother tongue (i.e., Chinese, Malay, or Tamil), numeracy, the sciences, humanities, physical education, and the aesthetics. Music, as part of the aesthetics curriculum, is a mandatory subject for all Singaporean students between Primary1 (first grade) and Secondary 2 (eighth grade) in schools (Figure 1.1).

While music may be perceived by policy makers and school administrators as a subject worthy of pursuit in Singapore schools, its impact on the general student population and those who are actively engaged in musical activities both in and out of school often remains ambiguous. The *Renaissance City Plan 3.0 Report*, a blueprint developed by the Ministry of Information, Communications, and the Arts (MICA) to develop Singapore into a highly innovative and multi-talented global city for arts and culture, highlighted that "given Singapore's transition into a global knowledge and innovation-based economy, there is a need to make a stronger case that a holistic and balanced education with an equal emphasis on 'hard' (e.g., mathematics, science) and 'soft' (e.g., music, art) subjects is critical for competing in a global marketplace" (MICA, 2008). This report was released after a comprehensive consultation

through various focus groups and individual interviewing sessions comprising stakeholders such as educators, practitioners, business sponsors, and grassroots organizations.

The above recommendation raises a national concern on Singaporean children's low attitudes and beliefs in the studying of soft subjects such as music. To improve attitudes and beliefs towards learning music in school, there is a need to first examine the current situation on how Singaporean children perceived school music in comparison with the other school subjects. At present, no study in Singapore exists which investigates how students perceive music in relation to other core and non-core subjects in schools. An informed knowledge on social and psychological factors that influence Singaporean children's attitudes towards studying music and other school subjects would serve as basis for education authorities and music teachers to shape music curriculum that would foster formal music instruction in the Singaporean school system.

Achievement Motivation in Education

Achievement motivation theorists attempt to explain individual's choice of achievement tasks, vigor in carrying them out, persistence on those tasks, and performance on them (Eccles, Wigfield, & Schiefele, 1998). Expectancy-value theory has been one of the most important perspectives on the nature of achievement motivation, beginning with Atkinson's (1957) influential research and subsequently, the studies of Battle (1966), Crandall (1969), and more recently Feather (1988), as well as Eccles and her colleagues (Eccles, Adler, Futterman, Goff, Kaczala, Meece, & Midgley, 1983). The theory proposes that vocational and educational choices are most directly related to individual's expectancies for success and the values that they attach to various tasks.

Both expectancy-related beliefs and task values are influenced by task-specific beliefs such as competence beliefs, perceived task difficulty, and individuals' goals, self-scheme, and affective memoires (Eccles et al., 1983). Expectancies for success are beliefs about how well

individuals believe they will do on upcoming tasks, either in the immediate or longer term future. Competence beliefs, on the other hand, are defined as individuals' evaluations of their abilities in different achievement tasks and have been found to predict achievement-related outcomes such as academic results (Covington & Dray, 2002). Task values, on the other hand, are conceptualized in terms of four major components: intrinsic value or interest, attainment value or importance, utility value or usefulness, and perceived cost (Wigfield & Eccles, 2002). The current study focused only on the first three components (i.e., intrinsic, attainment, and utility) since they have been empirically proven to predict adolescents' choices to continue engaging with a given activity in the future (Meece, Wigfield, & Eccles, 1990). Perceived cost was not considered in the current study as the purpose was to examine students' competence beliefs and task values in studying music in school, rather than investigating factors why students choose or not choose music instruction in school.

With only a few exceptions, research on adolescents' achievement motivation has focused on cognitive, physical, and social domains such as reading, mathematics, sports, and social activities (Eccles, Wigfield, Flanagan, Miller, Reuman, & Yee, 1989; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002; Wigfield, Eccles, Mac Iver, Reuman, & Midgley, 1991). Music, as a non-academic aesthetic domain, has been particularly understudied in Singapore. To date, researchers have examined the development of American elementary school children's (grades 1-6) self- and task perceptions in instrumental music (Eccles, Wigfield, Harold, & Blumenfeld, 1993; Wigfield, Eccles, Yoon, Harold, Arbreton, & Blumenfeld, 1997), factors that predict American elementary school children's (grades 1-6) choice and engagement in instrumental music activity (Yoon, 1997), and children's (grades 1-12) motivation to study music as compared to the other school subjects across eight Western and Eastern countries (McPherson

& O'Neill, 2010). No study has been found that exclusively investigates adolescents' (grades 6-8) achievement motivation in music as a school subject in the context of Singapore schools.

Domain differences in competence beliefs and task values appear to be the largest at the youngest ages and the rate of change in perceptions for both males and females was most dramatic during primary school, typically leveling off during middle school and into high school (Jacobs et al., 2002). Previous studies have shown that gender gap for some school subjects such as mathematics and English decreased or remained stable over time (Eccles, et al., 1993; Wigfield et al., 1997). Still not enough is known, however, about gender differs on motivational beliefs about individual non-core academic subjects, particularly in the area of music, across the primary-secondary transition.

The early adolescent years from Primary 6 to Secondary 1 are critical periods where young adolescents in Singapore make an important school transition as they move from primary to secondary school. Primary-secondary school transition could be a disruptive experience for most secondary school students as they do not simply transfer to a totally unfamiliar physical school building, they also have to adapt to new teachers, new peers, new school subjects, and new co-curricular activities (Ministry of Education, 2010d). For some students, the move to secondary school signifies a new milestone for music learning as they start to engage in playing with an ensemble or singing in the choir for the very first time (Figure 1.1).

Past researchers have been interested in developmental changes in adolescents' beliefs and values over the primary-secondary transition from an achievement motivation perspective. Eccles, Midgley, and Adler (1984) found that the primary-secondary transition has a significant impact on adolescents' self-perceptions and self-esteem. The students' beliefs and values tended to become more negative towards different subject areas following the primary-secondary

transition, and this downward trend continued throughout adolescence. In addition, Eccles and her colleagues also found that the decrease in early adolescents' academic achievement self-perceptions occurred more in certain subject areas than in others (Eccles et al., 1983, 1989; Wigfield et al., 1991). At present, no study in Singapore investigates adolescents' changing beliefs and values for music in school during the transition from primary to secondary school. This study provided research evidence to determine whether the primary-secondary transition would be a critical time for a significant change in adolescents' motivational beliefs and values in classroom music instruction from the Singaporean perspective.

Purpose of the Study

The purpose of this study was of two-fold: to examine demographic profiles of Singaporean music and non-music students; and to investigate the role of students' self-evaluative beliefs and values that linked to achievement motivation about studying music in school as compared to other school subjects across Primary 6, Secondary 1, and Secondary 2 levels according to gender and music student status. By examining competence beliefs and task values that Singaporean adolescents attached to specific school subjects, the current study provided insight into the current state of music education among early adolescents with the aim of understanding priorities and providing suggestions that might foster music instruction that is offered in Singapore's schools.

Specifically, the research questions were:

1. What are typical profiles of music and non-music students?

2. To what extent do music and non-music students differ in their attitudes towards studying music in school as compared to other school subjects?

3. What motivational factors predict music and non-music students' enrollment in instrumental music instruction outside of school?

4. To what extent do male and female students differ in their attitudes towards studying music in school as compared to other school subjects?

5. Are there differences in attitudes towards music as compared to other school subjects among Singaporean students across Primary 6, Secondary 1, and Secondary 2 levels?

Background and Context

Singapore, officially the Republic of Singapore, is a sovereign country located at the southern tip of the Malay Peninsula in Southeast Asia. Formerly, a British colony and subsequently, a part of the Federation of Malaysia, Singapore gained its independence on 9 August 1965. With a land area of 274.2 square miles (the size of Rhode Island), Singapore is now home to over 5 million people. Chinese (74.1%) is the majority, with Malays (13.4%), and Indians (9.2%) forming the significant ethnic minorities. The country has four official languages: English, Chinese, Malay, and Tamil. Malay is the official national language, whereas English is the official administrative language in the country (MICA, 2010b). For a comprehensive description of the history of Singapore, as well as its education system, see Appendix A.

Music Education in Singapore

Classroom music instruction. Music is taught at primary and secondary levels as a mandatory but non-examinable subject for all Primary 1 (first grade) to Secondary 2 (eighth grade) students. Lower primary students (grades 1-4) have two 30-minute music periods each week, whilst upper primary (grades 5-6) and lower secondary (grades 7-8) students have one 30- or 35-minute period weekly.

The current music curriculum was implemented in 2008 in all primary and secondary schools in Singapore after a comprehensive review of the previous music curriculum. The aims of the current music curriculum are (Ministry of Education, 2008b):

1. To develop awareness of and appreciation for music of various cultures and the role of music in daily living,
2. To develop ability for creative expression through music making, and
3. To provide the basis to develop an informed and lifelong involvement in music.

The curriculum serves only as a general guide for music teachers. Music teachers, therefore, teach music lessons at their own pace "according to students' existing diverse music abilities" (Ministry of Education, 2008b, pp. 3). This allows music teachers various levels of flexibility in topic selection, repertoires for study, and instructional approaches when giving music instruction in the classroom.

The three principal modes of musical activity in classroom music instruction are performing (singing and playing instruments), listening (appreciating music), and creating music. These modes of musical activity align with the following six overarching objectives in the music curriculum guide (Ministry of Education, 2008b):

1. Sing and play melodic and rhythmic instruments individually and in groups.
2. Create and improvise music.
3. Describe and evaluate music through listening.
4. Develop understanding of music elements/concepts.
5. Discern and understand music from various cultures and of various genres.
6. Understand the role of music in daily living.

Performing music. Students learn to sing Eastern and Western folk music as well as popular songs using tonic sol-fa and their respective handsigns. The song repertoire also includes a list of MOE recommend National Education songs, typically local ethnic and patriotic songs sung in four languages (English, Chinese, Malay, and Tamil). In terms of instrumental playing,

students learn a selected classroom musical instrument, usually the recorder, at the beginning of Primary 3, as well as other classroom percussion instruments.

Listening music. The repertoire used in the listening activities includes both Western (e.g., Western orchestra, musicals, jazz) and Eastern (e.g., Chinese orchestra, Malay *kompang*).

Creating music. Music creation is typically taught as music improvisations and composition using classroom musical instruments or through the use of music technology.

Although music is a non-examinable subject in school, student receive a grading (i.e., A, B, or C) for the subject from their music teachers which appear on their report card. The assessment modes used include assessment rubrics, portfolio, and practical performances (Ministry of Education, 2008b).

Music teachers. As direct employees of the MOE, all music teachers go through a uniform teacher training program offered by the National Institute of Education (NIE). The NIE is the only teacher training college in Singapore, and trainee teachers undergo certification training here in order to become qualified school teachers. Music teachers undergo a two-year diploma, a four-year undergraduate music education degree, or a one-year graduate diploma teaching training programs that are taught by faculty members with educational experiences from the United Kingdom and the United States (National Institute of Education, 2009). After completion of their training, all beginning music teachers are centrally deployed to schools by the MOE based on individual school's staffing needs.

Other than teaching music, music teachers also teach at least two other academic subjects (e.g., English, mathematics) in the primary school, and one other subject in the secondary school. Such arrangement means that lesson preparation time for music teachers has to be distributed among the different subjects. The MOE recognizes this issue and recommends that all new music

teachers to be trained for single-subject specialization starting from 2011 so that they will focus only teaching music in school (Ministry of Education, 2010a). Additionally, the Singapore Teachers' Academy for the aRts (STAR) has also been established by the MOE in 2010 in order to further strengthen the music profession (Ng, 2010).

Music Co-Curricular Activities (CCAs). Co-curricular activities are administered by the Extra-Curricular Activities Centre (ECAC) of the MOE, and it has been renamed to Co-Curricular Activities Branch (CCAB) in 2004. The ECAC was first opened by the then-Minister of Education Mr. Ong Pang Boon in 1970 with the aim that "successive young people would be more physically fit in mind and body and be more able to give their best not only in sports but also in nation-building" (Television Corporation of Singapore, 1970). According to the MOE website (Ministry of Education, 2009c), the mission of the CCAB has since been evolved, from the development of "loyal and well-rounded citizens who could appreciate culture and lead healthy lifestyles" in the 1990s and the early 2000s, to the recent statement "to build and enhance the capacity of schools to enrich students' experience through CCAs."

CCA participation is mandatory for all secondary school students in Singapore. Students choose to participate in at least one CCA selected among sports and games, performing arts, uniformed groups, or clubs and societies. CCAs are typically conducted after formal school hours on the school compound under the guidance and instruction of either school teachers or free-lance instructors. CCA participation, however, is not mandatory for primary school students.

Music CCAs in Singapore are characterized by a high level of choice. A wide variety of music CCAs are offered in every primary and secondary school, including Western (i.e., band, choir, harmonica, handbells, and strings) and Eastern (i.e., *angklung*, Chinese orchestra, *gamelan*, and Indian orchestra) ensembles (Ministry of Education, 2009c). This wide variety of music

CCAs reflects Singapore's unique geographical position at the crossroads of Asia, as well as its rich mix of different cultures, lifestyles, and religions.

Furthermore, the participation of music CCAs serves as an important platform for formal music instruction outside classroom music. More than 75,000 students in the country participated in music CCAs in 2009, of which band (30.7%) was the most participated music activity, and this was followed by choir (26.6%), Chinese orchestra (18.2%), and the other music ensembles (24.5%) (MICA, 2010). The higher participation rate in the school band may be due to the fact that band is a required music CCA in all secondary schools. This initiative was aided by the directive given by the then Prime Minister Mr. Lee Kuan Yew who in 1965, instructed that the formation of school bands should be considered a "high priority" (Sidek, 1995). Overall, there was an increase in the number of music CCA students across the years from 2002 to 2007 (National Arts Council, 2008). Music CCAs, therefore, play a crucial role in the support and promotion of mass participation of music activities among school-age students, regardless of gender, ethnicity, education streams, and socio-economic status, to receive formal music instruction in school, in the Singaporean context.

Another characteristic of music CCAs is the emphasis on competition (Koh et al., 2011). Almost all primary and secondary schools in Singapore had participated in the national music contest, or the Singapore Youth Festival (SYF) central judging (Ministry of Education, 2007). This assessment provides a central evaluative exercise for music CCA ensembles to benchmark their performing standards with the other participating ensembles. Each ensemble is evaluated by a panel of local and international adjudicators, and is presented with a gold with honors, gold, silver, bronze, or certification of participation, depending on its performing standards.

It may be argued that SYF plays a critical role in promoting the development of music education in Singapore. In 2007, 97.7% of all primary schools and 98.8% of all secondary schools participated in at least one of the SYF central judging events (Ministry of Education, 2007). The SYF, therefore, has encouraged mass music participation, promoted growth of arts culture in schools, and raised standards in the overall arts education in schools (Ministry of Education, 2007).

Music talent programs. Currently, there are three main channels for students to pursue their interests and further develop their talent in music in the formal school setting. The Music Elective Program (MEP) is catered for a selected group of secondary school students (grades 7-10) who demonstrates excellent academic and musical abilities to undertake a four-year music course at selected secondary schools that will prepare them for the GCE 'Ordinary' Level Higher Music examination at the end of Secondary 4 (10^{th} grade). More than 6,000 students had graduated from the MEP and Arts Elective Program students since their inception in, respectively, 1982 and 1984 (Ministry of Education, 2010b). Those students who are not enrolled in the MEP could apply music as an elective subject leading to the GCE 'Ordinary' Level examination at the end of Secondary 2 level (eighth grade) if they meet the minimal music prerequisites (Figure 1.1). These non-MEP students meet once a week for three hours outside formal school hours at selected MEP centers.

The MOE provides two additional platforms for students who demonstrate strong musical performing proficiency to further develop their musical potential. The Music Talent Development Center (MTDC) for bands, choirs, and Chinese orchestras is a recent project initiated by the MOE. Opened in 2009, the MTDC provides developmental opportunities for musically talented students to harness their musical potential through various training programs,

including music theory instruction and group instrumental tuition taught by professional musicians.

Furthermore, students who demonstrate exceptional musical talents are given the opportunity through competitive music auditions to participate in one of two National Projects of Excellence, comprising the Singapore National Youth Orchestra and the Singapore Youth Chinese Orchestra. Unlike the MTDC, students in these premier national youth orchestras receive one-to-one private music instruction from professional musicians. In addition, they also have many opportunities to receive an exemplary orchestral experience and the highest quality professional music education and training. Over the years, many outstanding musicians have passed through the ranks of these youth orchestras and become prominent professional musicians and music educators in their own right.

External music examinations. The graded practical and music theory examinations administered by the Australian (e.g., Australian Music Examinations Board), British (e.g., Associated Board of the Royal Schools of Music-ABRSM, London College of Music, Trinity College London), and China (e.g., China Conservatory of Music) music examination boards provide a structured music education for students receiving private music instruction outside of school. Many school-aged children and adolescents spent time and money to sit for these graded examinations every year and this was evident from the findings that Singapore produced one of the largest enrolments of international candidates for the UK-based ABRSM music practical examination (ABRSM, 2006). Additionally, music certificates obtained from these music examinations can also be used as prerequisites for secondary and post-secondary music courses (Ministry of Education, 2008b). For example, the prerequisites for GCE ‘Ordinary’ Level music

courses requires a pass in Grade 3 practical and theory examinations from the above British or Australian music examination boards.

Summary

Figure 1.1 provides an overview of the music education system in Singapore from primary schools to post-secondary schools. Under formal schooling, Singaporean students undergo a six-year primary education, four- or five-year of secondary education, and two- or three-year of post-secondary education. All Singaporean students take two important national examinations, i.e., the Primary School Leaving Examination (PSLE) at the end of Primary 6, and the General Certificate of Education (GCE) Examinations at the end of Secondary 4. See Appendix A for a more comprehensive description of the Singapore education system.

Figure 1.1

Overview of the Singapore Music Education System

Stage	**Primary (Primary 1-6)**		**Secondary (Secondary 1-4/5)**			**Post-Secondary**
Grade Levels	**Grades 1-5**	**Grade 6**	**Grade 7**	**Grade 8**	**Grade 9-10/11**	**Grade 11-12/13**
Classroom Music	Required				Elective	Not required
Music Elective Program	(Not applicable)		MEP (Secondary) →			-MEP (Junior College) -Music Diploma
GCE Music	(Not applicable)				Elective →	
Music CCA	Optional CCA Participation		Mandatory CCA Participation (e.g., music, sports)			Optional
Private Music Instruction	Conducted by External Music Examination Boards (Optional)					
Major Examinations	PSLE (6^{th} Grade)		GCE "Ordinary" (10^{th}/11^{th} grade) GCE "Normal" (10^{th} grade)			GCE "Advanced" (12^{th} grade)

As seen in Figure 1.1, the period between Primary 6 (sixth grade) and Secondary 2 (eight grade) is a crucial period as students need to make three important educational choices. First, at the end of Primary 6, students who possess formal music qualifications from external graded examinations and obtain good PSLE results could apply to enroll in the Music Elective Program (MEP) in selected secondary schools. Second, the new incoming Secondary 1 students will need to make decision on a CCA for themselves, such as band or basketball, and the selected CCA will be with them for the next four to five years. Finally, students make another educational choice on specific school subjects to undertake for the GCE examinations at the end of Secondary 2. Music is considered as an elective subject. Summing up, it is important to note that any educational choice made during this period will be directly related to students' post-secondary courses which depend on their previous instruction during the secondary school years.

Definitions of Key Terms

The following definitions were formulated to clarify terms and acronyms that were used in this study within Singapore.

Co-Curricular Activities (CCA)

Students in the secondary schools are required to participate in at least one CCA. CCA participation at the primary school level, however, is optional. CCAs are categorized under a) *Clubs and Societies* (e.g., audio and visual club, green club, robotics club, etc.); b) *Uniformed groups* (e.g., National Cadet Corps, National Police Cadet Corps, Singapore Scout Association); c) *Performing Arts* (e.g., band, drama, Chinese dance); and d) *Sports and Games* (badminton, basketball, volleyball) (Ministry of Education, 2009c).

Core and Non-core academic Subjects

In the Singaporean context, core subjects include English, mother tongue language, mathematics, humanities, and science, whereas music, physical education, and visual arts are non-core school subjects (Hodge, 2008).

Early Adolescence

According to Arnett (2001), early adolescence is defined as the period from grades 4 – 7 (ages 10 to 14).

Express Stream

Lower secondary students study English and the mother tongue language, i.e., Chinese, Malay, or Tamil, as well as mathematics, science, English literature, history, geography, visual arts, design and technology, and home economics as examinable subjects. Students may choose to study mother tongue at a higher level (Higher Mother Tongue) if they are within the top 10% in the Primary School Leaving Examination (PSLE) results or in the top 11%-30% band who meet the language criteria. In addition, students also take civics and moral education, music, and physical education as non-examination subjects. Students will sit for the General Certificate of Education (GCE) 'Ordinary' Level Examination at the end of Secondary 4 (tenth grade) (Ministry of Education, 2010e). The Express stream students typically further their post-secondary education at junior colleges or polytechnics.

Gender

The term "gender" refers to culture and should be used when referring to men and women as social groups (APA, 2010).

General Certificate of Education (GCE)

A certificate which is jointly issued by both the Singapore Examination and Assessment Board and the University of Cambridge Local Examinations Syndicate to students who sit for the

examination by the end of their secondary education. Students who undergo the four-year Express course will sit for the 'Ordinary' level examination, whilst those who undergo the four-year Normal course will sit for the 'Normal' level examination (Ministry of Education, 2010d).

Hard and Soft Subjects

Soft subjects are domains that relate to skill sets nurtured through exposure to the arts, humanities, and languages. Conversely, the hard subjects are those that relate to skill sets that lead to business and technical professions like finance, information technology, law, and engineering (MICA, 2008).

Holistic Education

The Ministry of Education (MOE) advocates a holistic approach to education with the aim to nurture the total person in the moral, cognitive, physical, social, and aesthetic spheres. Specific outcomes are articulated in the MOE's "Desired Outcomes of Education" (Ministry of Education, 2009a).

Music Co-Curricular Activities (CCAs)

Music CCAs in Singapore include both Western and Eastern ensembles. The Western ensembles comprise band, choir, guitar, harmonica, handbells, harp, and strings, whilst the Eastern ensembles comprise Chinese orchestra, Chinese *guzheng*, Malay *angklung*, Malay *gamelan*, and Indian ensembles (Ministry of Education, 2009c).

Music Students

All students receive mandatory classroom music instruction in Singapore schools until the end of Secondary 2 (Eighth grade). The term "Music Students" was used in this study to refer to those who students who elected to participate in music CCAs such as band and choir, as compared to other non-music CCAs such as sports, clubs and societies. This is in the context that

CCA participation is optional for primary school students and mandatory for secondary school students (Chapter 1). Music students in the current study also included those who enrolled in optional private music instruction (e.g., piano, violin) outside of school (Chapter 4).

Non-Music Students

The term "Non-Music Students" was used in this study to refer to students who chose to participate in non-music CCAs such as sports, clubs and societies and who were not receiving private music instruction outside of school.

Based on Q31: *If you were given an opportunity to learn outside of school, how much might you want to learn (musical instrument)*, this group of students were further categorized according to:

High Aspiring Non-Music Students: referring to participants who provided a 4 or 5 ratings (out of a 5-point Likert Scale) to Q31, or

Low Aspiring Non-Music Students: referring to participants who provided a 1, 2 or 3 ratings (out of a 5-point Likert Scale) for Q31 (Chapter 4).

Normal Academic Stream

Students in the Normal Academic course study English and the mother tongue language, i.e., Chinese, Malay, or Tamil, and other subjects similar to those in the Express course. The scope of content for these students, however, is less than those from the Express course. They also take civics and moral education, music, and physical education as non-examination subjects. Students sit for the GCE 'Normal' Level Examination at the end of Secondary 4 (tenth grade). If competent, students will sit for the GCE 'Ordinary' Level Examination at the end of Secondary 5 (eleventh grade) (Ministry of Education, 2010e). Students typically further their post-secondary education at polytechnics or the Institutes of Technical Education.

Normal Technical Stream

The Normal Technical course prepares students for technical-vocational education at the Institutes of Technical Education. Normal Technical students study English, mother tongue language at the basic level, mathematics, science, computer applications, technical studies, visual arts, and social studies. In addition, they also take civics and moral education, music, and physical education as non-examination subjects. Students sit for the GCE 'Normal' Level Examination at the end of Secondary 4 (tenth grade). If competent, students could sit for the GCE 'Ordinary' Level Examination at the end of Secondary 5 (eleventh grade) (Ministry of Education, 2010e).

Outside School Instruction (Q31)

Instruction outside school is interpreted as private tuition in the current study. Singaporean parents typically send their children for private tuition in different school subjects outside of school in the hope that the additional instruction will help their children do better in school. Concerns were raised by the Education Minister during the Singapore Parliament Debate on 7 March 2011 on the excessive reliance on private tuition in Singapore among students and that parents were spending too much money on their children's private tuition (Fu, March 2011).

Primary School Curriculum

At the primary level, students go through a six-year course aimed at giving them a good grasp of English, mother tongue language (Chinese, Malay, or Tamil), and mathematics. In addition, students also learn science, social studies, civics and moral education, music, art and crafts, health education, and physical education (Hodge, 2008).

Primary School Leaving Examination (PSLE)

At the end of Primary 6, students take the Primary School Leaving Examination (PSLE), that assesses their suitability for secondary education and also, places them in the appropriate secondary school course that will match their learning pace, ability, and inclinations (Hodge, 2008). Students sit for four subjects, namely English, mother tongue, mathematics, and science in the PSLE, and they may also choose to sit for mother tongue either at a higher level (Higher Mother Tongue) or a lower level (Basic Mother Tongue) (Ministry of Education, 2010c). On passing the PSLE, students are placed to one of three education streams (i.e., Express, Normal Academic, or Normal Technical) in the secondary school depending on their results.

Profile

According to the Oxford English Dictionary, a profile can be defined as "a graphical or other representation of information relating to particular characteristics of something, recorded in quantified form" (Profile, 2009). Profile in the current study refers to a set of characteristics that identify music and non-music students according to ethnicity, education streams, gender, instrumental ownership at home, and immediate family members' instrumental musical experiences.

Significance of the Study

To date, there are few studies dealing with music education in Singapore schools. Some past dissertations and refereed research studies have been written dealing with the history of Singapore general music program (Chong, 1991), current status of Singapore wind band program (Lee, 2004), adolescents' musical preferences (Teo, Hargreaves, & Lee, 2008), adolescents' attitudes towards secondary school music education (Wong, 1999), and musical behavior of primary school children (Lum, 2009). A quantitative research study, such as this, provided the Singapore music education field a different perspective in describing, explaining, and predicting

statistically meaningful information on motivational beliefs and values that are perceived by Singaporean students in relation to music in school.

The study of adolescents' achievement motivation in music as compared to other school subjects would enhance existing knowledge on academic motivation towards subjects such as music and art, in addition to English, mathematics, and physical education that have previously been investigated by Eccles, Wigfield, and their colleagues (Eccles et al., 1989; Wigfield et al., 1991). This cross-sectional and cross-disciplinary study yielded meaningful findings that could be valuable to school administrators and practitioners on how achievement motivation in music among Singaporean adolescents might be similar to or different from the other school subjects.

Finally, previous achievement motivation research studies have typically administered using paper-and-pencil survey questionnaires. The emergence of low-cost computing and the rapid growth of the internet have created a new environment for conducting survey research (Sue & Ritter, 2007). The current study extended current survey research methodology on achievement motivation by using a web-based online platform as a tool to complement paper-and-pencil questionnaire. Specifically, the survey was conducted in an organized classroom setting during school hours and students responded by clicking their perceived ratings electronically using desktop computer rather than on a typical paper-and pencil questionnaire. Web-based survey is a relatively new survey format as compared to traditional paper-and-pencil format and this study provided better insights on its applicability in studies related to the expectancy-value theory.

Assumptions and Delimitations

The subject domains in the current study (music, English, mathematics, science, physical education, art) were chosen because they were common to all adolescents from Primary 6 to

Secondary 2 level in Singapore. In addition, this study only assessed variables related to competence beliefs, perceived task difficulty, and task values because they represented the central constructs in Eccles et al.'s (1983) expectancy-value theories of achievement motivation. These constructs have been empirically proven to influence adolescents' achievement behavior, such as performance on school subjects and choice of which subjects to pursue (Eccles et al., 1989; Wigfield et al., 1997). The delimitation of this study was the use of expectancy-value theoretical framework to study Singaporean students' motivational beliefs and values for music and the other school subjects. There would be other motivational theories that may also be relevant to this study.

Organization of the Study

The thesis is organized into five chapters. Chapter 2 provides a review of existing research and literature according to two main topics: 1) adolescents' learning of music in school 2) an overview of early and modern motivation theories focusing on past research studies related to Eccles et al.'s (1983) expectancy-value theoretical model. Chapter 3 delineates the research design and methodology of the study. Topics discussed include selection of sample, design of survey instrument, research procedures, data analysis, as well as description of the pilot study. Chapter 4 contains an analysis of data and a discussion of findings illustrated with pertinent tables and figures. The final chapter focuses on the summary and discussions of significant findings of the research in the light of existing literature with implications for issues and suggestions for future research at the end. The study concludes with a bibliography and appendixes.

CHAPTER 2: REVIEW OF LITERATURE

This chapter reviews and organizes related literature in two parts. The first part surveys studies on how adolescents from both Western and Eastern countries learned music in school. The second part provides a review of early and modern motivation theories but focuses on expectancy-value theory which provides the theoretical and research framework that underpins this study.

Adolescents' Learning of Music in School

The following section explores how adolescents learn music in the school context, focusing on the following areas: attitudes towards classroom music instruction, classroom music activities, instrumental music instruction, music listening, and extracurricular music participation.

Attitudes towards Classroom Music Instruction

Lamont, Hargreaves, Marshall, and Tarrant (2003) studied 1,479 primary and secondary students, aged between 8 and 14, from 12 primary and 9 secondary schools in England to investigate their attitudes towards music in and out of school. It was found that 67% of all students in the study reported enjoying their class music lessons, but the enjoyment decreased between Grade 6 and Grade 9, suggesting that younger students were more likely to enjoy school music when compared to their older counterparts.

Marshall and Hargreaves (2007) further examined the change in adolescents' perceptions of classroom music instruction over the transition from primary to secondary school using the same sample from Lamont et al.'s (2003) study. Seventy-five sixth-graders from five primary schools were involved in the study. They were first interviewed during their final weeks in primary school, and followed by another interview following their first year in their respective secondary schools. Although 68% of these students felt that music lessons in the secondary

school had improved across the primary-secondary transition, 43%, however, felt that their expectations of secondary music had not been met.

Conversely, there were studies where adolescents reported positive attitudes towards music in school. Boal-Palheiros and Hargreaves (2001) investigated differences among 120 adolescents between aged 9-10 years and 13-14 years old from the United Kingdom and Portugal on their perceptions towards the functions of music listening at home and at school. Sixty percent of all students rated their music lessons in school as "good" and they particularly enjoyed music lessons in which they could be active and learn something new, rather than having passive and difficult lessons. Students in the same study, however, viewed their music teachers in school as being "traditional" as they taught classroom activities that focused on listening, analyzing, and the learning of facts. The authors suggested that these music teachers might have emphasized the cognitive aspects of listening to music (e.g., music history, musical elements) in school, rather than on students' enjoyment (e.g., musical moods, feelings) while listening to music.

In Singapore, Chua and Koh (2007) conducted a national study involving 384 students from 19 primary and 23 secondary schools about their attitudes towards classroom music. Findings of the study showed that secondary school students generally enjoyed their music lessons in schools. Fifty-eight percent of secondary school students indicated enjoyed music lessons "very much" whereas 34% responded "quite a bit". In addition, the study also found that primary school students (68% of primary school students) expressed enjoying classroom music more than secondary school students (58% of secondary school students).

Classroom Music Activities

Preference of classroom music activities is consistent among adolescents from both Western and Eastern countries. Lamont et al. (2003) studied 1,479 primary and secondary

students from 21 schools in England to investigate their attitudes towards music in and out of school. Their findings indicated that students enjoyed playing musical instruments and singing more than learning theoretical lessons such as music history in their music lessons. The older secondary school (grades 7-9) students, however, responded less positively to singing than their younger primary school counterparts (grades 4-6), particularly when they were asked to sing music out of their own choices in front of their peers.

In Eastern countries, Ho (2001) investigated attitudes of 877 Hong Kong adolescents between 12 and 16 years of age from nine Chinese secondary schools towards musical learning both inside and outside of school. She found that students valued singing, but disliked composing, creative music making, and activities that emphasized learning of abstract facts about music and musicians, such as music history and music theory (Ho, 2001). In Singapore, Chua and Koh (2007) found that while most primary and secondary school students enjoyed classroom music lessons, they felt less confident about creating music when compared to performing music or talking about music.

Adolescents' preference of classroom musical activities also varies according to their level of musical training. Lamont et al. (2003) examined preferences of classroom music activities by engaging focus group discussions with three groups of primary and secondary school students based on level of musical training: *training*, *aspiring*, and *non-aspiring*. *Training* students (currently involved in musical training outside class music lessons) and *aspiring* students (not currently having training but expressing an interest in doing so) cited playing instruments and creating music as their most liked classroom music activities. *Non-aspiring* students who were not currently having musical training and also expressing no interest in doing so indicated listening as their favorite aspect of classroom music lessons.

There are differences between males and females from the East Asian regions in their participation of classroom musical activities. In Hong Kong, Ho (2001) found that females expressed more interest in singing and playing recorder, whilst males favored music history, music theory, and computer-based music. In another study, Ho (2003) compared differences among 3,864 primary and secondary school Chinese students from Hong Kong, Shanghai, and Taipei on their preferences for musical activities and musical genres in the classrooms. Females from these three regions preferred, in rank order, performing, singing, and listening, whilst their male counterparts favored listening, singing, and computer-based music (Ho, 2003).

Instrumental Music Instruction

Most music students who learn to play an instrument will not go on to become professional musicians or work in careers related to music (McPherson & McCormick, 2000). An important aim of learning an instrument, therefore, is to prepare music students with the basis for lifelong engagement with music in an amateur capacity. Learning to play an instrument requires the development of a wide range of musical and non-musical skills and considerable time and effort for practicing the instrument. Importantly, it also requires motivation and commitment to a specific instrument such that individuals will not lose interest in playing or give up learning the instrument altogether.

East Asian adolescents are engaging in active instrumental learning in school. Ho (2001) reported that 32% of Hong Kong secondary school students in the sample indicated learning a musical instrument in school, whilst 29% of them responded pursuing private music instruction outside school. In a transnational study, Ho (2003) found that up to 84% of 3,864 participants from Hong Kong, Shanghai, and Taipei in the study received instrumental instruction in school. It must be highlighted that the considerable high instrumental participation rate among these East

Asian adolescents, however, also included learning of classroom instruments, such as recorder and harmonica, which were taught in classroom music and extracurricular music activities.

It is evident that Western musical instruments are preferred by students in East Asian countries. Ho (2003) reported that Chinese adolescents from Hong Kong, Shanghai, and Taipei expressed more interest in receiving music instruction in Western instruments than Chinese instruments in school. Among the most liked Western instruments were recorder, harmonica, and piano (in rank order), whilst trombone, oboe, and French horn were the least liked instruments in school. On the other hand, among the most liked ethnic Chinese instruments were *dizi* (Chinese bamboo flute), *suona* (Chinese trumpet), and Chinese percussion, whilst *gehu* (Chinese bass bowed-string instrument), *sanxian* (3-stringed fiddle), and *sheng* (mouth-blown free reed instrument) were the least liked Chinese instruments.

Adolescents' choice of musical instruments may be related to two factors: physical size and melodic function, and gender differences. According to Ho (2001), the popular musical instruments were typically portable, soloistic, loud, and melodic, whilst less popular instruments were bulky, soft, and mostly non-melodic accompanying instruments. Furthermore, Ho (2001) found females chose to play piano and flute, whereas males chose to play guitar and percussion. Similar findings were found among Western participants where British males indicated playing guitar, drum, and trumpet, whereas females indicated playing piano, flute, and violin (O'Neill & Boulton, 1996).

Past studies have demonstrated high attrition rate in instrumental music instruction among adolescents. A British study investigated the degree of involvement with musical activities in school found that around 80% of adolescents in the study had at least one instrument at home, with piano or keyboard and recorder being the most popular home instruments and

followed closely by guitar and violin (Lamont et al., 2003). Despite the high percentage of instrument ownership, only a minority of adolescents (30%) received music instruction outside of school. In another study, North, Hargreaves, and O'Neill (2000) determined the importance of music to adolescents by investigating why they listened to and performed music. Subjects were 2,465 adolescents between 13 and 14 years of age from 22 secondary schools in England. North et al. (2000) reported that 17.8% of early adolescents currently received music instruction and over 50% had played an instrument in the past but subsequently giving it up.

Three factors may contribute to the decline in the learning of musical instruments. First, the learning of musical instrument declines with age. In Britain, adolescents' participation rate for instrumental learning declined from 30% in Year 4 to 12% in Year 9 (Lamont et al., 2003). Another study found that the proportion of British adolescents who reported playing a musical instrument dropped from 61% to 33% during the transition from primary to secondary school (O'Neill, 2002). Lamont et al. (2003) concluded that the primary-secondary transition was a cause of concern for music teachers as this period also marked a sharp drop in participation rate for instrumental learning among adolescents. Second, another study has suggested that females may contribute to the high attrition rate in instrumental learning as it was found that females' level of participation declined more dramatically than males particularly in the secondary school years (Lamont et al., 2003). Finally, Cutietta and McAllister (1997) found that woodwind students, as compared to brass, string, and percussion instrumentalists, demonstrated the largest decline in instrumental participation. This was evident as only one-fifth as many woodwind students from Grade 7 in the study continued to play their instruments in Grade 12.

It was of interest that Hargreaves and Marshall (2003) found that approximately 40% of non-music students indicated they would like to receive instrumental music instruction at school

if given the opportunity. This suggests that schools need to provide access and opportunity to non-music students, particularly *aspiring* non-music students who are not able to learn music for various reasons on their own.

Music Listening

Researchers have argued that there seems to be some dissonance between students' musical preferences and the repertoire used in the music classroom. In Singapore, Chua and Koh (2007) found that the music repertoire used in the primary and secondary music classrooms did not typically match students' music preferences. Students in the study indicated that they enjoyed Western popular music more so than any other types of music. The study, however, revealed that classical music was played most often in classroom music lessons when compared to ethnic and popular music. Chua and Koh (2007) concluded that music teachers would need to revise the type of repertoire used in the classrooms in order to better engage students during music instruction.

In another study, Boal-Palheiros and Hargreaves (2001) found that only 49.2% of British and Portuguese adolescents liked the music that they heard in classroom music lessons. The Portuguese adolescents were less critical of the school music repertoire than their British counterparts perhaps because the music that they listened to was often suggested by themselves, rather than by their teachers. A further finding revealed that the participants clearly preferred Western popular music to classical music. Participants associated classical music to features like "instrumental" and "slow", but children themselves preferred "vocal" and "fast" music. The researchers concluded the need for music teachers to be more receptive to students' preference for specific musical genres as well as emphasizing on aspects of enjoyment and emotion on music listening activities in the classroom.

It is evident that Western popular music is the most preferred music genre among adolescents in Eastern and Western countries, such as Hong Kong (Ho, 2001, 2003, 2007), Portugal (Hargreaves & Boal-Palheiros, 2001), Shanghai (Ho, 2003), Singapore (Chua & Koh, 2007; Teo, 2005), Taipei (Ho, 2003), the United Kingdom (Lamont et al., 2003; North, Hargreaves, & O'Neill, 2000), and the United States (Fung, 1996; McCrary, 1993; Tarrant, North, & Hargreaves, 2000). In the Western countries, British adolescents indicated preference for popular music to Western opera and folk musical styles (North, Hargreaves, & O'Neill, 2000). In the Eastern countries, adolescents from Hong Kong, Shanghai, and Taiwan preferred (in rank order) Western pop, Mandarin pop, and Cantonese pop (*Cantonese is a Chinese dialect originated from southern part of China*), whilst traditional Chinese vocal music, Taiwanese regional folk music, and Taiwanese opera were least valued (Ho, 2001, 2003). As with their East Asian counterparts, Singaporean adolescents also reported greater preference for popular music (Teo, 2005).

Adolescents' strong preference for popular music poses a challenge in the teaching of non-popular musical styles in the classroom. Some research suggests that participation in formal music instruction of a particular musical style has a significant effect on students' attitudes and opinions of and about the music studied (Koh, 2010; Price & Swanson, 1990; Shehan, 1985). Shehan (1985) found a significant increase in positive opinions about non-Western *gamelan* music that was taught using a performance-oriented approach with sixth-grade students over a five-week period. In another study, undergraduates' participation in a music appreciation course reported significant effects on their knowledge and attitudes of Western classical music (Price & Swanson, 1990). In addition, Koh's (2010) research on effects of music appreciation program with Secondary 3 (ninth-grade) Singaporean students on their liking for East Asian music

suggested that one way to broaden adolescents' musical preference was to introduce musical traditions that they did not typically favor through formal music instruction.

There are differences between males and females in their musical listening preference in school. Hargreaves et al. (1995) found that among popular musical styles, males favored heavy metal and rock music, whilst females provided higher liking ratings for reggae, chart, and pop. Additionally, females were found more inclined than males to engage in listening Western classical music and they were also more tolerant towards "serious" musical styles (Ho, 2001, 2003). The author concluded that females' greater acceptance of a wider range of musical styles suggested that they were less conservative and more sensitive than males when perceiving and reacting to different musical styles.

Extracurricular Music Participation

Past studies have suggested that being involved in any structured, after-school program that takes place in a safe and supportive environment is useful in promoting positive youth development (Larson, 2000). It is not surprising, therefore, that structured school-based extracurricular activities are found to be associated with positive outcomes among adolescents such as lower rates of school dropout, reduced risk of problem behaviors, higher peer status, and higher academic achievement (Barber, Eccles, & Stone, 2001; Eder & Kinney, 1995).

Specifically to music, participation in extracurricular arts activities is associated with a host of positive social and developmental outcomes. Eccles, Barber, Stone, and Hunt (2003) conducted longitudinal research with a cohort of approximately 1,800 American youths through eight waves of data collection beginning from sixth grade until the time when they were 25-26 years old. When compared to adolescents who were not involved in extracurricular performing arts activities, those who involved in performing arts (i.e., music, dance or drama) reported these

outcomes: greater enjoyment of school at both 10th and 12th grade levels, a higher Grade-Point-Average at 12th grade, and greater likelihood of attending and graduating full-time college at age 21-22 and 25-26 respectively. Additionally, Barber et al. (2001) also found that performing arts participants predicted better social behaviors when they were found less frequently engaged in risky behaviors than non-performing arts students at 21-22 and 25-26 years of age.

There are, however, negative outcomes associated to extracurricular performing arts participation. Eccles et al. (2003) reported higher rates of drinking among performing arts students between the ages of 18 and 21, as well as higher rates of suicide attempts and psychologist visits by the age of 24. According to Barber et al. (2001), these higher rates of suicide attempts and psychologist visits may be due to the nonconformist nature of performing arts extracurricular activities that emphasized ultimate expression of individuality (e.g., performing music).

The school choir has been found to be the most popular extracurricular music activity in schools. Hargreaves and Marshall (2003) found that approximately 25% of Year 4 and 10% of Year 9 English students participated in the school choir. Other extracurricular music activities, such as recorder group and band, had less than 10% of each school cohort participating. In Hong Kong, Ho (2003) reported among 3,864 ethnic Chinese students, the school choir, music appreciation, and school band, in rank order, were the most selected extracurricular music activities, whereas Chinese orchestra, brass band, and instrumental classes were the least selected. In Singapore, band (30.7%) was the most commonly participated music activity, and this was followed by choir (26.6%), and Chinese orchestra (18.2%) (MICA, 2010a).

There are gender differences in the selection of extracurricular music activities in school. In the United States, Eccles and Barber (1999) reported males typically elected sports activities,

whereas females elected prosocial (e.g., church and volunteer activities), performing arts (drama and marching band), and school involvement (pep club and student council) activities. Within specific extracurricular music activities, East Asian females chose to participate in choir, Western orchestra, and singing, whereas males chose to participate in brass band, music theory, and computer music (Ho, 2001, 2003, 2007). Overall, there were more females participating in extracurricular music activities than males.

Summary

Five strands can be deduced from a literature review of how adolescents learn music in school. First, younger adolescents generally possessed a more positive attitude towards school music than their older counterparts (Boal-Palheiros & Hargreaves, 2001; Chua & Koh, 2007; Lamont et al., 2003). Second, adolescents generally preferred active music making activities (e.g., singing, listening) to passive activities (e.g., music theory, music analysis) (Boal-Palheiros & Hargreaves, 2001; Ho, 2003). Third, listening to popular music and learning to play a Western musical instrument were popular among adolescents from the Eastern countries (Chua & Koh, 2007; Ho, 2001, 2003, 2007; Teo, 2005). Adolescents' strong preference for popular music in the classroom settings may pose challenges for music educators when teaching non-popular musical styles to students (Koh, 2010; Shehan, 1985). Next, it was evident that instrumental music instruction was highly valued by adolescents from both Western and Eastern countries (North et al., 2000; Ho, 2001, 2003, 2007). There was, however, a declining participation in instrumental music instruction among adolescents with age (Hargreaves & Marshall, 2007; Lamont et al., 2003). Finally, both positive and negative outcomes were reported in relation to the participation of extracurricular performing arts activities in school.

Early Theories of Motivation

Part II comprises three sections. The first section reviews five prominent early theoretical perspectives on motivation. The second section reviews theories related to the theoretical framework of this thesis, i.e., Eccles et al.'s (1983) expectancy-value theory, and this is followed by definitions of motivational constructs used in the theory. The final section summarizes major research studies that examined the development of students' competence beliefs and task values in various academic domains focusing on differences in gender, structure, and developmental changes. The following section reviews five prominent early theoretical perspectives on motivation: will or volition, instinct, drive, arousal, and incentive.

Will or Volition Approach

Early psychologists drew views from philosophers, such as Plato and Aristotle, who conceived the mind as comprising of three primary human psychological functions: knowing or thinking (cognition), feeling or affection (emotion), and willing (motivation). Will or volition is the cognitive process by which an individual decides on and commits to a particular course of action. To do something of one's own will is to do it by one's own resources and sustained efforts and this is independent of external source or pressure. Various psychologists such as Wilhelm Wundt, Narzis Ach, and William James pioneered psychological studies in will (Hunt, 1993). Ideas suggested by these psychologists, however, have not been widely adopted as they were rather vague and difficult to test empirically. Overall, volition is considered incomplete because it is limited to implementing actions designed to attain goals (Pintrich & Schunk, 2002).

Instinct Approach

Another early perspective on motivation focuses on instincts that are generally viewed as biologically determined innate patterns of behavior found in all living beings. This theoretical

perspective assumes individuals are governed by instincts similar to those of animals in all actions, thoughts, and intents. That is to say that instinct would tell individuals to take the easiest path for survival through the use of their inborn abilities. For example, babies are born with a natural instinct that allows them to cry when they are hungry or feeling uncomfortable. McDougall (1926) believed that individuals with curious instincts would know how to satisfy their curiosities (awareness), feel emotionally aroused (emotions) when curious, and attempt to attain the goals of these curiosities (conative) in order to satisfy their instincts. Like theories of will, instinct theories suffer methodological weaknesses when viewed from a scientific perspective. This approach is not considered a complete theory of motivation because it fails to explain what causes the action, what factors interact with it, and how the action can be modified.

Drive Reduction Approach

Drive theory is rooted on the principle that living beings are born with certain physiological needs and that a negative state of tension is created when these needs are not satisfied. Simply speaking, when a need is satisfied (e.g., eating when one is hungry), drive is reduced and individuals return to a state of homeostasis. Conversely, when individuals experience a need because of deprivation of food, air, or water, drive is activated causing it to respond. Two major psychologists for drive theories are Sigmund Freud (1934) and Clarke Hull (1943). According to Freud's (1934) psychoanalytic theory, individuals' actions, thoughts, and emotions have one of two goals: to help them survive (e.g., going to school to assure their survival in terms of improved finances) or to prevent their destruction (e.g., demanding safety and protection against poisons or terrorists). On the other hand, Hull (1943) believed that individuals used drive to erase deficiency or a lack of something from their biological imbalances. For example, one shivers to get warm and if that fails, the individual will be

motivated to put on a sweater or find a heater. Overall, the strength of drive is determined upon the length of deprivation and the intensity of the resulting behavior.

Arousal Approach

James (1890) considered emotional arousal as a mediator between perception of a stimulus and behavior. As with Hull's (1943) drive reduction theory, arousal theory states that living beings are driven to maintain an optimal level of tension by increasing or decreasing stimulation in order to feel comfortable (Pintrich & Schnuk, 2002). It is different from Hull's (1943) theory, however, because it does not rely on only a reduction of tension but a balance achieving as well. According to Berlyne (1971), the deviations above or below an optimal level of arousal would trigger motivation in order to return to this optimal level. This theory is also evident in Vygotsky's (1978) concept of zone of proximal development (ZPD), which refers to the difference between what individuals can do without help and what they can do with help under the guidance or influence of more knowledgeable others. An arousal perspective to education provides students with experiences which are in their optimal arousal level or ZPD, thereby encouraging them to advance in their individual learning.

Incentive Approach

While instinct and drive theories acquire motivation through biological needs, theories of incentive motivation explain behavior as a response to external stimulus and its rewarding properties. For example, an individual might be willing to travel across the city to dine at a speciality restaurant but the same individual might not be willing to travel the same distance to eat at a fast food restaurant. Incentive motivation, therefore, can be understood as an interaction between drive and incentives or rewards. Rewards can be organized as extrinsic or intrinsic. Extrinsic rewards are external to the person (e.g., praise or money) whereas intrinsic rewards are

internal to the person (e.g., satisfaction or a feeling of accomplishment). Intrinsic rewards can be further distinguished in two different forms: enjoyment and obligation. Enjoyment refers to motivation based on what an individual thinks what is fun or enjoyable to do. On the other hand, obligation refers to motivation based on what an individual thinks ought to be done. This will be further discussed later in the expectancy-value theory section.

Expectancy-Value Theoretical Framework

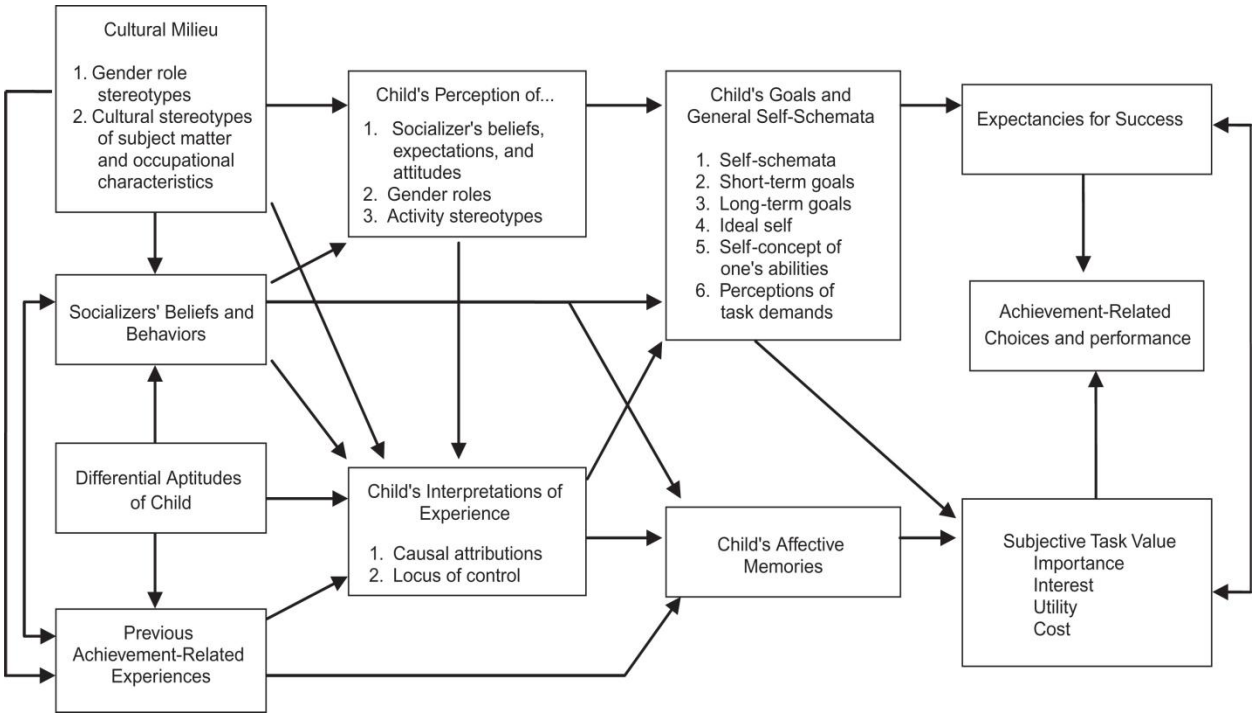
Early motivation theories provided important foundation for modern motivation theories that emerged particularly during the late 1960s to 1970s. Unlike those grand theories that attempt to explain a macro perspective of motivation, the modern motivation theories focus on a particular domain of application, including extrinsic, intrinsic, physiological, and achievement motivation. Achievement motivation is a construct that refers to the desire to do well in order to attain an inner feeling of personal accomplishment (McClelland, 1985). It is characterized by the need for success or the attainment of excellence, and evidenced by persistence and effort in the face of difficulties.

One of the most important strands of achievement motivation is expectancy-value theory. Drawing upon the theoretical and empirical work associated with decision-making and achievement theory, this social cognitive theory adopts a perspective that argues that individuals' choice, persistence, and performance can be explained by their beliefs about how well they will do on the task and the extent to which they value the task (Atkinson, 1957). Modern expectancy-value theory as defined by Eccles, Wigfield, and colleagues (Eccles et al., 1983; Wigfield, Eccles, & Rodriguez, 1998; Wigfield & Eccles, 2002) is the focus of this study. This current model is based on Atkinson's (1957) expectancy-value model but differs from it in two ways. First, both expectancy and value components in Eccles et al.'s (1983) model are more elaborate and they are

linked to a broader range of psychological and social determinants than Atkinson's model. Second, Eccles et al.'s (1983) model is grounded more in real-world achievement tasks as compared to Atkinson's laboratory studies that are often used to test earlier versions of expectancy-value theory.

Figure 2.1

Eccles et al.'s (1983) Expectancy-Value Theoretical Framework (2002 version)



According to this model (Figure 2.1), individuals' achievement performance, the amount of effort exerted, persistence, and choice of achievement tasks are influenced by their expectancy-related beliefs and task values they attach to these tasks (Eccles et al., 1983). Specifically, individuals' beliefs and values are influenced by task-specific beliefs such as ability beliefs, perceived task difficulty, and individuals' goals, self-scheme, and affective memories. These social cognitive variables, in turn, are influenced by individuals' perceptions of their own

previous experiences and other socialization influences (Eccles et al., 1983; Wigfield & Eccles, 2002).

Expectancy-related Beliefs (Can I do this task successfully?)

Expectancy-related beliefs comprise both competence beliefs and expectancies for success (Eccles et al., 1983; Wigfield & Eccles, 2002). Expectancies for success, a closely related achievement motivation theory to Bandura's (1986) self-efficacy theory, are individuals' beliefs about how well they will do on upcoming tasks, either in the immediate or longer term future. While expectancies for success focus on the future, self-concept of competence focuses on individuals' current perceived ability. Self concept of competence is defined as individuals' evaluations of their perceived competence in the different achievement tasks (Eccles & Wigfield, 1995; Wigfield & Eccles, 2002) and they are closely related to ability beliefs. The following section reviews three theoretical perspectives of achievement motivation that are related to the expectancy-related beliefs of Eccles et al.'s (1983) expectancy-value theoretical framework.

Self-efficacy theory. The concept of self-efficacy is based on Bandura's (1986) social learning theory that emphasizes the role of observational learning and social experience in the development of personality. According to Bandura (1986), self-efficacy is defined as individuals' judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. That is to say individuals with high self-efficacy or those who believe they can perform well are more likely to view difficult tasks as something to be mastered rather than something to be avoided. Individuals generally will avoid tasks when their self-efficacy is low but will engage tasks when their self-efficacy is high and which they believe they can succeed.

Self-efficacy is strongly related to effort and task persistence (Pintrich & Schunk, 2002). Individuals with high self-efficacy in a task are more likely to exert more effort, even in the face of difficulty, and persist longer than those with low efficacy. In extreme cases, individuals with self-efficacy significantly beyond their actual ability often overestimate their ability and this can lead to difficulties completing the assigned task. Conversely, students with self-efficacy significantly lower than their actual ability are unlikely to grow and expand their skills. In sum, a level of self-efficacy that is a little above one's actual ability is optimum as it encourages students to tackle challenging tasks and gain valuable learning experiences.

Self-efficacy beliefs are goal-oriented and they are likely to be related to personal efficacy expectations (Pintrich & Schunk, 2002). McCormick and McPherson (2003) studied 332 instrumentalists between the ages of 9 and 18 who were completing an externally graded music performance examinations. The respondents were asked to complete a questionnaire immediately before they undertook the examination. Questions asked focused on how well they thought they had mastered the examination music, the grade they expected to obtain, and their appraisal of their general musicianship as compared to their peers. It was found that students who displayed high self-efficacy tended to receive higher scores for their examination than their peers who displayed the same level of skills but lower efficacy expectations. The authors implied that higher levels of self-efficacy might strengthen students' confidence in completing a specific task, even in the face of difficult situations such as taking an examination.

Self-concept theory. According to Harter (1982), self-concept of competence refers to individuals' beliefs about their self-evaluative judgments and abilities to accomplish certain tasks. Researchers generally view self-concept of competence as domain specific (Pintrich & Schunk, 2002). For example, an individual may have differential perceived competence in various

academic, physical, and social domains, such as possessing high competence beliefs in music and mathematics but lower competence beliefs in peer relations and physical abilities. This leads to the idea that competence beliefs is domain specific, rather than global.

Self-perception of competence becomes more differentiated with age and with developmental changes. Austin and Vispoel (1992) reported that Grades K-2 children had more positive perceptions of competence in music than reading or mathematics. Over time, however, children's self-perception in instrumental music competency declined sharply between Grades 1 and 4 and their competency beliefs for the domain were also lower than those of the other subject areas (Eccles, Wigfield, Harold, & Blumenfeld,1993; Wigfield, Eccles, Yoon, Harold, Arbreton, & Blumenfeld, 1997).

There is a debate whether a causal direction does exist between self-concept of competence and achievement performance. Some researchers suggest that growth in perceived competence also produces growth in achievement performance whilst others think otherwise (Pintrich & Schunk, 2002). Instead of seeking to find causal relationship between the two variables, Pintrich and Schunk (2002) suggest that future research should concentrate on understanding how self-concept of competence and actual achievement work together to predict future behavior at different ages, for different students, and in different contexts.

Attribution theory. This theory concerns individuals' attributions for their success and failure and how these attributions influence subsequent motivation. Much of the current research on attribution theory is based on the work of Weiner (1986). He classified attributions into three causal dimensions: stability (stable or unstable), locus of control (internal or external), and controllability (controllable or uncontrollable). For example, a music student may attribute the passing of clarinet examination to luck (unstable, external, uncontrollable) or effort (stable,

internal, controllable), whereas another student who fail the same examination may attribute it to the lack of ability (stable, internal, uncontrollable).

Weiner (1986) further explained that each of these three dimensions has important psychological consequences that influence subsequent motivation and behavior. The stability dimension relates most directly to expectancies for success and failure, whereas locus of control and controllability dimensions are, respectively, related to esteem- and social-related affective reactions to success and failure. For example, individuals who attribute failure to a lack of ability leads to lowered expectancies for success (stability dimension) and negative affects such as pride (locus of control dimension) and shame (controllability dimension). On the other hand, students who attribute their success due to internal reasons (e.g., effort) are more likely to possess higher sense of self-worth than students who attribute their success to external reasons (e.g., luck).

O'Neill and McPherson (2002) extended the theory by defining attributions as consisting of ability ("I did well because I'm a good musician), effort ("I did well because I practiced hard"), luck ("I had a lucky day"), task difficulty ("The examiner asked me the easiest scales"), and strategy ("I practiced the hard part in small sections"). In a study with 349 student instrumentalists who were completing an externally graded performance examination, McPherson and McCormick (2000) reported that over 50% of respondents attributed their success or failure for the examination to how much effort they had given to preparing for it or how hard they tried during the examination. In contrast, only 12.4% of the beginners, 9.9% of intermediate-level players, and 19.5% of advanced musicians attributed their results to overall ability, luck, and task difficulty. According to Austin and Vispoel (1992), students who attributed failure to inadequate effort or poor learning strategies were more likely to anticipate

improved future performance as compared to those who attribute their failure to the lack of ability.

Relating to expectancy-value theory. The review of motivation theories above demonstrates that expectancy-related beliefs have a prominent place in several theoretical models of achievement motivation, including self-efficacy (Bandura, 1986), self-concept (Harter, 1982; Marsh, 1986), and attribution (Weiner, 1986). These achievement motivation theories can be viewed as belonging to a larger family of expectancy-value theories which suggest that individuals' ability-related self-perceptions and expectancy-related beliefs motivate their subsequent achievement behavior.

Unlike earlier expectancy-related achievement theories, there are three additional features to Eccles et al.'s (1983) expectancy-related beliefs. First, Eccles and Wigfield (1995) demonstrated that competence beliefs and expectancies for success for mathematics loaded on the same factor and therefore can be treated empirically as the same construct. Second, competence beliefs in Eccles et al.'s (1983) model comprised a more specific belief about self-conception of competence in a given domain (e.g., how good at music are you?) in combination of expectancy beliefs about how well individuals would do on upcoming tasks, either in the immediate or longer term future (e.g., how well do you think you will do on your next music test?).

Third, Eccles et al.'s (1983) competence beliefs included both individuals' confidence of one's intellectual abilities (e.g., if you were to rank all the students in your music class from worst and best, where would you put yourself?) and estimations of the difficulty of the options they are considering (e.g., compared to most of your other subjects, how difficult is music for you?). Task difficulty perceptions were characterized as the objective difficulty as well as the

amount of effort required to do well in a particular school subject (Eccles & Wigfield, 1995). Both competence beliefs and perceived task difficulty were distinct factors as confirmed by confirmatory factor analysis (Eccles & Wigfield, 1995; Wigfield & Eccles, 2002).

Overall, the model proposes that competence beliefs is related positively to expectancies for successes, whereas perceived task difficulty is predicted to relate negatively to expectancies (Eccles et al., 1983; Eccles & Wigfield, 1995; Wigfield & Eccles, 2002).

Task Values (Do I want to do this task and why?)

The theories discussed so far tend to emphasize cognitive aspects of achievement motivation such as efficacy judgments and attributions. These theories provide strong explanation of individuals' performance on different achievement tasks. Task values, on the other hand, are related to intrinsic and extrinsic motivation that focus on both cognitive and affective aspects of motivation. For example, individuals may show a lack of intrinsic motivation in a task if they decide not to engage in the task even though they are certain that they are competent to do it. The task value components in Eccles et al.'s (1983) expectancy-value model consider the circumstances under which task values contribute to individual's choice, persistence, and performance of the activity from the perspectives of intrinsic and extrinsic motivation. The following section reviews theoretical perspectives that are related to task values as defined by Eccles et al.'s (1983) expectancy-value theoretical framework, specifically self-determination, flow, and interest.

Self-determination theory. Self-determined behavior is behavior that originates from the self and results from individual's utilization of his or her volition (Deci & Ryan, 2002). When individual's behavior is self-determined, they are psychologically healthier and tend to be intrinsically motivated (Deci & Ryan, 2002). A fundamental aspect of self-determination theory

comprises three basic innate human psychological needs: 1) the need for competence, 2) the need for autonomy, and 3) the need for relatedness (Deci & Ryan, 2002). The need for competence is the main reason why individuals seek out optimal stimulation and challenging activities. Even though individuals can act competently and demonstrate their competence, they may still be doing so under the control of others. Self-determined students not only possess competence, they also feel in control to choose their own actions freely in order to satisfy the need for autonomy. Furthermore, self-determined students also possess the need to belong to a group in order to develop strong connections with others for optimum development to occur (Deci & Ryan, 2002).

The theory, however, has been the subject of some criticisms (Pintrich & Schunk, 2002). First, a number of questions have been raised about Deci and Ryan's contention that there are three basic psychological needs. Second, there are reservations about the universality of these needs and whether they would operate similarly in different contexts. Nonetheless, self-determination theory in general has been a dominant theoretical model as it has integrated many important issues in relation to the development of achievement motivation.

Flow theory. Flow or "optimal experience" is the state in which individuals are so involved in a given task that nothing else seems to matter (Csikszentmihalyi, 1990). That is to say that the experience itself is so enjoyable that individuals will do it even at great cost for the sheer sake of doing it. Interviews with mountain climbers, dancers, artists, musicians, and businessman revealed that their activity engagement yielded a specific form of flow experience characterized by: (1) clear goals and immediate feedback, (2) an equilibrium between perceived level of challenge and individual's capabilities, (3) merging of action and awareness, (4) a focus of attention on a limited stimulus field, (5) feeling in control of one's actions and the

environment, (6) a loss of self-consciousness, (7) a distorted sense of time, and (8) experiencing the task as intrinsically rewarding.

Flow arises only when individuals feel that the opportunities for action in a given situation match their abilities to master the challenges (Csikszentmihalyi, 1990). For example, if an expert band director (high ability) conducts an easy band work (low challenge), boredom may develop. Conversely, if a novice director (low ability) conducts a difficult work (high challenge), anxiety may result. If both challenges and skill levels are low, the novice director may feel apathy. To remain in flow, therefore, the complexity of the activity must increase and the novice director has to develop new skills and to take on new challenges in order to obtain optimal balance between challenges and skills.

Researchers have found that both challenges and skills must be relatively high before a flow experience becomes possible. O'Neill (1999) examined the extent to which flow experiences accounted for differences in the amount of time spent practicing on their instruments from three groups of young musicians: high achievers and moderate achievers from a specialist music school, and high achievers from a non-specialist school. High achievers from both non-specialist and specialist music schools reported more flow experiences when practicing as compared to moderate achievers from specialist music school. An implication of this finding suggests that moderate achievers may need to continually be provided with demanding challenges in order to keep them interested, stimulated, and in flow when learning music (O'Neill, 1999). It should be noted, however, that excessive challenges may have detrimental effects on motivation to persist, particularly for these moderate achievers who have made a commitment to pursue specialized music training (Austin, Renwick, & McPherson, 2006).

Interest theory. Closely related to the notion of intrinsic motivation is work on the theory of interest. Interest is a relational construct that consists of a more or less enduring relationship between a person and an object, and this relationship is always realized by specific objects or activities (Krapp, Hidi, & Renninger, 1992). Interest theorists often differentiate between individual and situational interest (Hidi, 2000). Individual interest is a relatively enduring individual predisposition to experience enjoyment in working with certain domains (e.g., a particular interest in math or music). Individual interest is further divided into two components: feeling-related and value-related interest (Schiefele, 1991). Feeling-related interest refers to the feelings that are associated with an activity itself, such as involvement, stimulation, or flow. Valued-related interest, on the other hand, refers to the attribution of personal significance or importance to an activity. Situational interest, on the other hand, is a short-lived or momentary attention to a particular domain aroused by specific aspects of the learning environment (e.g., classrooms, media, etc.). When situational interest is transformed into individual interest, individuals will exhibit interest as a heightened psychological state (Krapp, Hidi, & Renninger, 1992) where they will find greater enjoyment learning, work harder, demonstrate persistence for longer periods of time, and attain higher levels of cognitive functioning and academic performance. For example, Renwick and McPherson (2002) observed a 12-year-old female clarinettist who was interested in a teacher-notated jazz piece that she had chosen herself (situational interest) and it appeared that the choice piece also matched with her emerging interest in jazz (individual interest). Over time, the interaction between individual interest and situational interest resulted in a heightened psychological state on the female clarinettist as demonstrated by her highly elevated level of attention, persistence, and strategy used in practising the choice piece in comparison to her practising of the teacher-assigned pieces.

Relating to expectancy-value theory. Eccles et al. (1983) define task values as the incentives for engaging in different activities. Four major components of task values are attainment value (importance), intrinsic value (interest), utility value (usefulness), and cost. Attainment value concerns the perceived importance of doing well on the task in terms of salient aspects of one's self-schema and core personal value (Eccles & Wigfield, 1995; Wigfield & Eccles, 2002).

Intrinsic value refers to the enjoyment students get from performing the task or the interest they have for the task (Eccles & Wigfield, 1995; Wigfield & Eccles, 2002). Eccles et al.'s (1983) intrinsic value or interest is similar in certain respects to the construct of interest as defined by Renninger and colleagues because it involves individuals' perceived interest in doing the task (e.g., how interested are you in learning music) (Renninger & Hidi, 2002). Intrinsic value has also been described as similar to intrinsic motivation as it refers to engagement in a task out of enjoyment (e.g., how much do you like learning music). Although there is some overlap in these constructs, it must be highlighted that intrinsic value and interest come from different theoretical perspectives and so have different intellectual roots. Additionally, intrinsic value also resemble relations to the constructs of flow (Csikszentmihalyi, 1990), expectancy-related beliefs (e.g., self-efficacy theory), and self-determination (Deci & Ryan, 2002) which emphasize the role of basic psychological needs and how they influence achievement motivation.

Utility value refers to how a task fits into individuals' short- and long-term goals (Eccles & Wigfield, 1995; Wigfield & Eccles, 2002). Individuals' perceived usefulness can be tied to the construct of extrinsic motivation where behavior is explained as a response to external stimulus and its rewarding properties (e.g.. how useful in high school music for what you want to do after you graduate and go to work?). Unlike intrinsic value, individuals can have a positive value for a

task that facilitates useful (utility) future goals for him or her (e.g., doing well in mathematics makes good money) even if they are not really interested (intrinsic) in doing it.

Cost refers to the sacrifices (e.g., time, other leisure activities) of engaging in a particular task and plays a critical role in individuals' choice of achievement activities (Eccles & Wigfield, 1995; Wigfield & Eccles, 2002). Cost is conceptualized in terms of three negative aspects of task engagement: 1) lost opportunities that result from making one choice rather than another (e.g., how the decision to engage in learning music limits access to watching TV); 2) amount of effort needed to succeed for the activity (e.g., whether the effort for getting good grades for music is worthwhile to you or not); and 3) emotional cost (e.g., anxiety, or fear of failure or success).

Relations between Competence Beliefs and Task Values

Both competence beliefs and task values are important determinants for predicting individuals' future choice behavior, engagement, and actual achievement (Eccles et al., 1983; Eccles & Wigfield, 2002; Wigfield & Eccles, 2002). Empirical studies have found that competence beliefs and task values are positively related to each other (Eccles et al., 1983; Eccles & Wigfield, 1995). This means that individuals tend to attach more value to activities in which they do well and believe they are competent.

Research has shown that individuals' competence beliefs predict achievement performance and the amount of effort exerted (Eccles, Adles, & Meece, 1984). Eccles and her colleagues reported that students' expectancies for success in mathematics were related to their mathematics achievement and their enrollment in subsequent mathematics courses (Eccles et al., 1984). Another study also found that students' competence beliefs about different tasks in sports influenced subsequent achievement behaviors such as effort, persistence, and performance for sports activities (Xiang, McBride, & Bruene, 2006).

Task values are critical dimensions that have been found to strongly predict individuals' actual and anticipated choice as well as their educational and vocational enrollment choices (Eccles et al., 1983; Eccles, et al., 1984; Updegraff, Eccles, Barber, & O'Brien, 1996). Students who valued mathematics and science, for example, reported higher intentions to take more elective courses in those subjects in the future (Eccles et al., 1984; Meece et al., 1990). Similarly, Xiang et al. (2006) also found intrinsic aspects of task values (interest and importance) to be the greatest predictors for adolescents to participate in subsequent sport activities.

Competence Beliefs and Task Values of Adolescents

Early adolescence is a period where students experience important changes biologically, socially, and cognitively (Arnett, 2001). Many probably would have already developed a more realistic picture of their relative competencies in various academic and non-academic domains and they also know what they really value for themselves. Eccles, Wigfield, and colleagues have done extensive work on studying adolescents' achievement motivation, choice, and persistence in the various academic domains. This section reviews and summarizes some of these major findings, focusing on developmental change in the structure in which adolescents conceptualize competence beliefs, perceived task difficulty, and task values as well as changes in the mean level of these beliefs and values in various academic and non-academic domains across gender and primary-secondary transition.

Structure. Eccles and Wigfield (1995) undertook a study with adolescents (fifth to twelfth graders) to define the different components of task value and assess their relationships with competence beliefs and perceptions of task difficulty. Using the technique of confirmatory factor analyses, Eccles and Wigfield (1995) found that a six-factor model best defined and explained relations between competence beliefs, perceived task difficulty, and task values: three

task value factors (importance, interest, usefulness), one competence-expectancy factor (competence beliefs and expectancies for success), and two task difficulty factors (perceptions of task difficulty and effort required to do well). While components of task value as perceived by adolescent participants were loaded on three distinct factors, another study with younger elementary school children resulted otherwise. The components of importance, interest, and usefulness were loaded on a single factor (Eccles, Wigfield, Harold, & Blumenfeld, 1993). Wigfield and Eccles (2002) concluded that task values were less differentiated for elementary school children, only becoming differentiated and stabilized as they got older, particularly into the early adolescence years.

Developmental changes. Various research studies have consistently demonstrated a decrease in mean level of competence beliefs and task values as children move into adolescence (Eccles et al., 1998; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002)). Jacobs et al. (2002) examined developmental changes in children's competence beliefs and task value perceptions from first through twelfth graders in three achievement domains. Over the course of schooling, children's competence beliefs and value perceptions across mathematics, reading, and sports declined as they got older.

Primary-secondary transition. A significant decline in adolescents' perceived competence beliefs and task values in school subjects has been linked with the transition from primary school to secondary school (Eccles et al., 1989; Wigfield et al., 1991). Wigfield et al. (1991) studied the change in mean level for competence beliefs and task values in mathematics and English during the primary-secondary transition. It was found that students' perceived competence and valuing for these subjects decreased after the primary-secondary transition with the exception that valuing of English that increased somewhat at seventh grade. It must be

highlighted that the decline in competence beliefs and task values at the middle-school transition should be seen as part of a larger and consistent downward trend rather than a qualitative leap in self-perceptions (Jacobs et al., 2002).

Some researchers have attempted to explain changes that could lead to declining beliefs and values for academic subjects during the transition to secondary school (Wigfield et al., 1998; Wigfield & Eccles, 2002). Wigfield et al. (1998) mentioned that secondary school students experienced major changes in authority relationships whereby there was a greater emphasis on teacher control and discipline, resulting in a less personal and positive teacher-student relationships. Another factor was the systematic changes in the organization of instruction (e.g., between-classroom ability grouping) that might likely to increase social comparison and competitiveness (Wigfield et al., 1998). Finally, adolescents' peer networks were disrupted when they moved to a new school environment. This disruption affected adolescents' sense of social competence and it would take time for them to regain their social competence in the new environment (Wigfield et al., 1998).

Domain differences. Researchers have found that young children and adolescents in the United States were able to distinguish their competence beliefs for different academic domains (Eccles et al., 1989, 1993; Wigfield et al., 1991, 1997). Eccles et al. (1993) assessed elementary school children's beliefs and values in the domain of mathematics, reading, music, and sports. A confirmatory factor analysis indicated that children's (first, second, and fourth graders) competence beliefs and task values formed clearly distinct factors in each domain. A crucial finding in the study was that even first graders had differentiated competence beliefs about what they were good at and what they valued in a particular achievement domain.

There were distinct differences between adolescents' valuing of core (e.g., mathematics) and non-core (e.g., physical education) domains (Eccles et al., 1989; Wigfield et al., 1991). Perhaps not surprisingly, the researchers found that adolescents valued core subjects (mathematics and English) than non-core subjects (sports and social activities). Although sports was the most liked activity, it was rated as the least important of all domains. In another study, Eccles and Wigfield (1995) found that the perceived interest for mathematics exhibited by fifth through twelfth graders seemed to be differentiated early in development, whilst distinction between perceived usefulness and importance occurred only in later elementary school. This means that as children gradually gain more experience with a variety of tasks and activities over time, they begin to differentiate different components of task values.

Gender differences. Relations between beliefs and behaviors are shaped by broader influences, such as gender. Eccles, Wigfield, and their colleagues have consistently found gender differences in competence beliefs and valuing of various academic domains among children and adolescents (Eccles et al., 1989, 1993; Meece, Wigfield, & Eccles, 1990; Wigfield et al., 1991, 1997). Females reported to have higher competence beliefs than males for reading and social activities. In contrast, males held higher competence beliefs than females for mathematics and sports, even after controlling for relevant skill-level differences.

Gendered differences also occurred in adolescents' valuing of different school subjects (Eccles et al., 1989; Wigfield et al., 1991). Males reported liking sports and perceived it more important than females, whereas females reported liking social activities and English more than males. There was, however, no difference in the valuing for mathematics.

Over the course of schooling from primary to high schools, it was found that gender gap in competence beliefs and task values declined (for mathematics competence, sports values) or

remained stable (for sports competence, mathematics values) over time (Jacobs et al., 2002). The rates of change in competence and values perceptions for both genders were most dramatic during elementary school, but typically leveling off during middle school and into high school. A critical finding from Jacobs et al.'s (2002) study was that males' competence beliefs in mathematics and language arts were declining more rapidly than did females, leaving females with much higher self-perceptions of competence in these subjects.

Summary

Three strands could be deduced from a literature review of research studies related to Eccles et al.'s (1983) expectancy-value theory. First, early adolescence would be a time when most adolescents would experience a major school transition that involved substantial physical and biological changes, as well as the need to adjust to new social and academic environments. Second, this period was also a time when adolescents' perceived competence beliefs and task values for the different achievement domains were actively changing and declining. Finally, the review highlighted that competence beliefs and task values were domain-specific as adolescents' beliefs did differ across and within the different academic, social, and physical domains. The next chapter discusses the methodology of this study.

CHAPTER 3: METHOD

The purpose of this study was to examine competence beliefs and task values that Singaporean students held about learning music and other school subjects across Primary 6, Secondary 1, and Secondary 2 levels according to gender and music student status. This chapter comprises five parts. The first part describes the rationale for adopting a quantitative approach for the study and the use of web-based survey questionnaire as a method of data collection. The second part describes how students were selected for the sample, and what population they represented. Part three describes the survey item design process that centered on rationale for the adaption of survey items developed by McPherson (2007) and followed by a discussion on changes made to the earlier items. The next part focuses on research procedures and includes information related to the securing of permission to conduct the survey, as well as description of pilot study and other administrative procedures. The chapter ends with an overview of the data analysis including coding and statistical treatments for quantitative data with SPSS.

Research Design

Research Method

Several researchers have used quantitative approaches to determine how children's competence beliefs and task values change across the elementary and secondary school years and how these perceptions predict performance in different academic domains and choices of activities to pursue (e.g., Ghazali & McPherson, 2009; Wigfield, Eccles, Mac Iver, Reuman, & Midgley, 1991; McPherson & O'Neill, 2010). A quantitative approach, according to Creswell (2003), is one in which a researcher primarily uses postpositivist claims for developing knowledge, employs strategies of inquiry, and collects data on predetermined instruments that yield statistical data. Postpositivists hold beliefs about the importance of objectivity and

generalizability, but unlike positivists, they modify their knowledge claims to understand truth based on probability rather than certainty (Mertens, 2010). A common limitation of a quantitative approach is the lack of qualitative, contextual information such as participants' actual feelings and experiences.

A quantitative approach to this study was chosen because a major purpose of the study was to survey and investigate profiles of Singaporean adolescents in their beliefs and values towards studying music as compared to other school subjects. A quantitative descriptive research design, therefore, would be the most appropriate to describe systematically, factually, and objectively the facts and characteristics of a given population or area of interest (Dalen, 1979).

Survey Design

Design considerations. To date, several researchers across different parts of the world have used survey method to conduct studies stemming from expectancy-value models of motivation as theoretical framework (e.g., González-Moreno, 2010**;** Jacobs et al., 2002; McPherson & O'Neill, 2010). According to Babbie (1990), the purpose of survey method was to make generalization from a sample to a population so that inferences could be made about some characteristics, attitude, or behavior of this population. Survey methods were used in this study to investigate Singaporean students' competence beliefs and task values about different school subjects across Primary 6, Secondary 1, and Secondary 2 levels as a function of gender and music student status (music, high aspiring, and low aspiring). A cross-sectional design that involved examining the characteristics of these students at one point in time was used. A longitudinal design was not appropriate for this study as the intent was to survey students' competence beliefs and task values at each grade level, rather than following them as they moved across grade levels.

Choice of data collection. Previous expectancy-value research studies have collected participants' data using paper-and-pencil self-administered survey questionnaire (e.g., Jacobs et al., 2002; McPherson & O'Neill, 2010). With the advancement of internet technology, the use of self-administered web-based survey method was a feasible option for data collection in this study. The several advantages in collecting data using web-based questionnaires were as follow. First, a self-report web-based questionnaire in the context of populations known to have high usage of internet (e.g., Singapore) had the advantage of maximizing the response rate which was critical for quantitative study such as this. An additional advantage of using web-based survey was that it minimized response error (e.g., illegible handwriting, missing responses) from specific items in the questionnaire. Finally, the web-based data, particularly in this study where the sample size was large, could be collected more efficiently, saving much time for inputting data, and also being relatively inexpensive to administer.

Several researchers have investigated whether data provided by web-based questionnaires would be of at least as good quality as those provided by traditional paper-and-pencil method (Gosling, Vazire, Srivastava, & John, 2004; Pettit, 2002). Pettit (2002) investigated whether manifestation of response set effects in web-based questionnaire responses would differ from those in paper-and-pencil questionnaire responses. She concluded that there was no statistically significant difference between both types of questionnaire in terms of random response, item nonresponse, extreme response, and acquiescent response (i.e., unusually high number of agreement). Additionally, Gosling et al. (2004) evaluated preconceptions about web-based samples and data quality by comparing a new large internet sample with a set of published traditional samples. The study concluded that internet-based findings were not adversely affected by nonserious or repeat responders and were consistent with findings from other traditional

survey methods. Taken together, these research studies suggested that an internet survey would be a potentially useful and valid data collection tool for this study.

A major criticism of web-based questionnaire is its coverage biasness as it only reaches out to particular segments of population who own a computer that comes with internet access. This limitation posed no concern in this study as students took the survey in their school's computer laboratories. Every primary and secondary school in Singapore has at least two computer laboratories and each laboratory is equipped with networked computers, a data projector, a pull-down projector screen, and a whiteboard. In addition, all primary and secondary students have adequate computer literacy as they have computer-based lessons at the school's laboratories regularly (Fu, 2010).

In sum, a cross-sectional self-administered web-based survey method was selected not only because of its many advantages in addition to that of traditional paper-and-pencil method. Most importantly, the context in Singapore has provided me the researcher a feasible and cost-effective ground to use web-based survey method in this study.

Selection of Participants

Identification of Schools

The target population was Primary 6, Secondary 1, and Secondary 2 students from all co-educational primary and secondary public schools located at the north-eastern region of Singapore. For the secondary schools, only those that offered the three education streams (Express, Normal Academic, and Normal Technical) were considered in the current study. The sampling frame was obtained from the Ministry of Education (MOE) website and comprised a list of 30 schools (12 primary and 18 secondary schools) from three school clusters.

The secondary schools were stratified by their ranking status ("ranked" and "unranked"). Each year, the MOE releases names of secondary schools that are ranked within the first nine bands for the Express stream and the first five bands for the Normal Academic stream based on academic results of the previous General Certificate of Education (GCE) 'Ordinary' Level Examinations. "Ranked" secondary schools are among the top 45% of all secondary schools in Singapore whereas the remaining secondary schools are considered as "unranked" secondary schools as defined in this study. Three secondary schools were randomly selected from each stratum of "ranked" and "unranked" schools. Six secondary schools were invited to participate in this study, of which five schools agreed to participate. One of the five participating secondary schools was subsequently excluded from the current study as the school did not offer classroom music instruction during the time when the survey was administered. For the primary schools, three schools were randomly picked by the researcher. All three primary schools agreed to participate in this study.

Table 3.1 provides an overview of the seven participating schools' overall SES in the form of residence type and parents' highest education level in comparison with the national averages. A few observations emerged. First, there was a larger percentage of students (91.3%) residing in public homes than those of the national averages as all participating schools were located at the proximity of public housing estates. Second, it was observed that the percentage of parents with a university degree (12.1%) in the participating schools was lower than the national average (19.0%). There was a higher percentage of parents with a secondary or post-secondary qualification (participating schools: 78.9%; national: 71.8%). As compared to the national averages, the participating schools have a close representation of parents with at least a primary school education (participating schools: 9.0%; national: 9.2%).

Table 3.1

Socio-economic Status Profile of Participating Schools

School	Student Residence Type (%)				Parents' Highest Education (%)				School Ranking **
	HDB: 1-3 Room	HDB: 4-5 Room/ Exec	Private/ HUDC	Others	Pri & Below	Sec / ITE	Pre-Univ / Poly	Univ	
Sch A	2.5	96.7	0.7	0.0	4.7	49.8	32.9	12.6	--
Sch B	1.2	92.3	6.2	0.2	5.7	50.9	30.7	12.7	--
Sch C	12.5	83.0	4.0	0.2	11.0	54.7	22.6	11.6	--
Sch D	25.3	62.9	10.4	1.0	12.7	55.5	20.5	11.3	UR
Sch E	4.8	84.4	10.4	0.5	7.2	56.4	25.1	11.3	R
Sch F	13.1	75.0	10.3	1.2	13.1	63.1	16.0	7.8	UR
Sch G	6.9	73.8	15.1	0.7	8.4	48.0	25.9	17.7	R
Sch Avg	9.5	81.2	8.2	0.5	9.0	54.1	24.8	12.1	--
*Nat Avg	13.0	NA	17.4	NA	9.2	NA	NA	19.0	--

Note. HDB: Housing Development Board (public housing); HUDC: Housing Urban Development Company; Exec: Executive flat; ITE: Institute of Education (vocational college); Poly: Diploma granted post-secondary tertiary institution; Univ: University; NA: Information not available.
*National Average: Retrieved from the participating schools' report in 2009.
**: Ranking retrieved from Ministry of Education website (Ministry of Education, 2008c).UR: Unranked schools; R: Ranked schools.

Identification of Sample

The sample was drawn using music classroom as an intermediate sampling unit. Such sampling procedure was widely used by Eccles, Wigfield, and their colleagues who used mathematics classroom as intermediate sampling unit for their studies (e.g., Meece et al., 1990; Eccles & Wigfield, 1995).

For the secondary school music classrooms, music teachers in each school was asked to arbitrary pick two classes from the Express stream, one class from the Normal Academic stream, and one class from the Normal Technical stream at each of the Secondary 1 and Secondary 2 levels. According to the national average, the proportions of all secondary school students who enrolled in the Express, Normal Academic, and Normal Technical streams were, respectively, 63.6%, 21.6%, and 12.0% (Ministry of Education, 2008c). For the primary school music

classrooms, music teachers in each school was asked to arbitrary pick five classes for the study. Within each selected music classroom, all students were invited to participate in the study. Taken together, 47 music classrooms out of a total of 72 music classrooms from seven participating schools were selected for the study.

Instrumentation

McPherson's (2007) Questionnaire

Background. This study extended a project that was initiated by McPherson in 2004 that investigated how students from Hong Kong were influenced by their beliefs about their ability and their interest in different school subjects in making educational choices. This study was expanded as part of an international study involving Grades 4 to 12 students across seven other countries (McPherson & O'Neill, 2010).

McPherson's (2007) questionnaire items were modified from earlier questionnaire items developed by Eccles, Wigfield, and colleagues in their studies to assess adolescents' beliefs about English, mathematics, sports, and social activities (Eccles et al., 1989; Wigfield et al., 1991). Items developed by Eccles and Wigfield (1995) to assess expectancy-related value beliefs included how good participants believed themselves to be at each school subject, their expectancies for success in each subject, how hard they thought each subject was for them, and their sense of efficacy about learning new things in each subject. Additionally, items that assessed task values tapped on participants' ratings of how interested each subject was, how important being good at the subject was to the child, and how useful the child thought the subject was. These items were again adapted and modified by Eccles, Wigfield, and their colleagues for subsequent studies to determine elementary school children's beliefs and values in music, in addition to mathematics, English, and sports (Eccles et al., 1993; Wigfield et al., 1997).

Questionnaire structure. McPherson's (2007) survey questionnaire comprised eight sections with a total of 38 items assessing two expectancy-related beliefs factors (self-concept of competence and expectancies for success), two task difficulty factors (perceived task difficulty and effort required to do well), and three task value factors (interest, importance, and usefulness). The response options included 5-point Likert scale expectancy-value items, 7-point Likert scale school subject ranking scale items, and 11-point Likert scale self-efficacy items. Each of the eight sections was organized within subheadings in order to help student respondents to understand what each section was about. Table 3.2 provides an overview of the table of specifications of this survey instrument.

Table 3.2

Table of Specification for McPherson's (2007) Survey

Section	Expectancy-Value Constructs	Item Number	Question Format
Demographics			
Grade Level		1	Single answer response
Age		2	
Gender		3	
No. of Siblings		4	
What you enjoy learning?	Intrinsic value	5, 6, 7, 8	5-pt Likert
What you find important?	Attainment value	9, 10, 11	5-pt Likert
What are you good at?	Competency beliefs	12, 27, 29, 30	5-pt Likert
What you find hard?	Task difficulty perception	14, 15, 16, 17, 18	5-pt Likert
What you find useful?	Utility value	19, 20, 21, 22, 23	5-pt Likert
What you feel confident about?	Expectancies for success beliefs	13, 28 25, 26 30	5-pt Likert 11-pt Likert Ranking

Table 3.2 (Cont.)

Section	Expectancy-Value Constructs	Item Number	Question Format
What your parents think?	Competency beliefs; Task difficulty perception; Attainment value	31	5-pt Likert
		32, 33	Ranking
What you do outside of school?	Participation of outside school activities	34	Single answer response
	Willingness to engage in outside school activities	35	5-pt Likert
	Frequency of engagement in outside activities	36	11-pt Likert
	Ownership of musical instruments at home	37	Single and multiple answer responses
	Instruments learned in and out of school	38	Single and multiple answer responses

Comparison with earlier items. McPherson's (2007) survey items differed from those of Eccles and Wigfield (1995) in the following three ways. In terms of questionnaire content, McPherson added new items related to self-efficacy motivational construct (e.g., confidence level) in the survey. In addition, new items were also included to determine children's perception of their parents' beliefs about them learning music and the other school subjects. Eccles and Wigfield (1995) only involved obtaining evaluation from teachers and mothers previously. Furthermore, McPherson expanded the questionnaire to include out-of-school learning context and the level of involvement when engaging in such outside school activities, whilst Eccles and Wigfield (1995) only focused on in-school learning.

In terms of research design, McPherson and O'Neill (2010) used a cross-sectional sample involving participants across Grades 4 to 12, whereas Eccles and Wigfield (1995) adopted a cross-sequential longitudinal sample that compared two separate but equivalent longitudinal

studies each covering a different period of time (i.e., first year: Grades 1, 2, 4 students; third year: Grades 3, 5, 6 students). Additionally, McPherson increased the number of school subjects from four to seven such that his questionnaire also included art, history, and science in addition to English (reading), mathematics, music, and physical education from the original studies.

Finally, in terms of the physical layout of the survey questionnaire, McPherson created new question format using a 5-point or 11-point Likert rating scale instead of a 7-point Likert scale used by Eccles and Wigfield (1995). In addition, the seven school subjects also appeared simultaneously at one glance for participant's responses. This was different from the original items that asked a series of questions on one specific school subject which was then followed by another school subject. Table 3.3 provides an overview of the changes of wording made by McPherson (2007) on the earlier items developed by Eccles and Wigfield (1995).

Table 3.3

Summary of Changes Made to the Wording of Eccles et al.'s (1995) Questionnaire Items by McPherson (2007)

Eccles & Wigfield (1995) Items	McPherson's (2007) Items	Changes Made
Intrinsic Value		
E2: How much do you like doing math? (not very much, very much)	M5: At school, how much do you like learning: (I don't like it, I like it a lot)	Change descriptors
	M6: At school, how interesting do you find: (not interesting, very interesting)	New item
	M7: Outside school, how interested are you in: (not interested, very interested)	New item
Attainment Value		
E3: Is the amount of effort it will take to do well in advanced high school math courses worthwhile to you? (not very worthwhile, very worthwhile)	M23: How worthwhile for you is the amount of effort it takes to do the following subjects? (not worthwhile, very worthwhile)	Change wordings

Table 3.3 (Cont.)

Eccles & Wigfield (1995) Items	McPherson's (2007) Items	Changes Made
E4: I feel that, to me, being good at solving problems which involve math or reasoning mathematically is (not at all important, very important)	M10: For you, how important is it to be good at: (not important, very important)	Change wordings
E5: How important is it to you to get good grades in math? (not at all important, very important)	M11: For you, how important is it to get good school results in: (not important, very important)	Change wordings
	M9: For you, how important is it to learn: (not important, very important)	New item
Utility value		
E6: How useful is learning advanced high school math for what you want to do after you graduate and go to work? (not very useful, very useful)	M21: How useful do you think learning the following subjects will be for you when you leave school and get a job? (not useful, very useful)	Change wordings
E7: How useful is what you learn in advanced high school math for your daily life outside school? (not very useful, very useful)	M22: How useful is learning the following subjects for your daily life outside school? (not useful, very useful)	Change wordings
	M19: In general, how useful is what you learn in each of these subjects? (not useful, very useful)	New item
	M20: How useful are these subjects compared to your other activities? (not useful, very useful)	New item
Ability/Expectancy-Related		
E8: Compared to other students, how well do you expect to do in math this year? (much worse than other students, much better than other students)	M28: Compared to other subjects in your class, how well do you expect to do this year in each of the following subjects? (much worse than other students, much better than other students)	Change wordings
E10: How good at math are you? (not at all good, very good)	M12: How good are you at each of these subjects? (very bad, very good)	Change wordings
E11: If you were to order all the students in your math class from the worst to the best in math, where would you put yourself? (the worst, the best)	M27: If you were to order all the students in your class from best to worst, where would you put yourself for each of the following subjects? (the best, the worst)	Change wordings

Table 3.3 (Cont.)

Eccles & Wigfield (1995) Items	McPherson's (2007) Items	Changes Made
E12: How have you been doing in math this year? (very poorly, very well)		Not used
	M28: Compared to other subjects in your class, how well do you expect to do this year in each of the following subjects? (much better than other students, much worse than other students)	New item
Task Difficulty		
E13: In general, how hard is math for you? (very easy, very hard)	M14: How hard are the following subjects for you? (very hard, very easy)	Change wordings
E14: Compared to most other school subjects that you take, how hard is math for you (my easiest course, my hardest course)	M15: Compared to your other school subjects, how hard are the following: (my hardest subject, my easiest subject)	Change wordings
E15: Compared to most other students in your class, how hard is math for you? (much easier, much harder)		Not used
Required Effort		
E16: How hard would you have to try to do well in an advanced high school math course? (not very hard, very hard)	M16: How hard do you have to try to do well in: (a little, a lot)	Change wordings
E17: How hard do you have to try to do get good grades in math? (a little, a lot)		Not used
E18: How hard do you have to study for math tests to get a good grade? (a little, a lot)	M17: How hard do you have to work to get excellent results in: (a little, a lot)	Change wordings
E19: To do well in math I have to work (much harder in math than in other subjects, much harder in other subjects than in math)		Not used

Current Questionnaire

Rationale for adaptation. The researcher adapted existing McPherson's (2007) survey questionnaire to understand Singaporean adolescents' expectancies and task values towards

studying music and the other school subjects. This was done only after obtaining prior permission from the questionnaire developer to use and modify his survey items.

The decision to adapt McPherson's (2007) items for this study was due to two key reasons. First, these items that were originally developed by Eccles, Wigfield, and colleagues have been widely used with early adolescents as subjects. Importantly, the measures have clear factor structures, good psychometric properties, and demonstrated strong positive relations to different achievement and choice outcomes. Wigfield et al. (1997) found that the internal consistency reliabilities for the competence beliefs scales using Cronbach's alpha ranged from .74 to .90 across four school subjects. For task value items, the internal consistency reliabilities for usefulness and importance ranged from .54 to .88, whereas reliabilities for interest ranged from .73 to .92.

Furthermore, McPherson and O'Neill (2010) also reported a high internal consistency reliabilities ranging from .81 to .86 and .79 to .86, respectively, for competence beliefs and perceptions of task difficulty in his motivational scale across eight countries. For task values, the Cronbach's alpha coefficients ranged from .81 to .86 across eight countries. These findings suggest that McPherson's (2007) motivational scale manifested a high degree of internal consistency and, therefore, appropriate for adaption in this study.

Second, McPherson's (2007) items were used in his international study across eight countries, including Eastern countries such as China, South Korea, and Hong Kong, to determine Grades 4 to 12 students' motivation towards learning music and other school subjects (McPherson & O'Neill, 2010). Taken together, adapting McPherson's (2007) questionnaire would potentially draw meaningful and useful inferences about Singaporean adolescents' motivational beliefs and values in studying music and the other subjects at school.

Considerations. Time constraint was a major consideration when designing the current web-based internet questionnaire. McPherson's (2007) questionnaire was designed such that participants would take approximately 30 minutes to complete the survey. In the context of Singapore where the duration of classroom music period was 30 to 35 minutes, the researcher needed to ensure that participants would be able to complete all survey items in the web-based survey questionnaire in 20 minutes, after logistical and classroom routines were completed.

The non-theoretical aspects of the questionnaire used in the current study differed from McPherson's (2007) in three ways. First, McPherson used paper-and-pencil self-administered questionnaires for data collection. This study, however, utilized online internet technology in the form of a web-based survey to collect data. Second, this study differed in its definition for music and non-music students. McPherson defined music students as those who were currently learning musical instrument either at school or outside of school. This study, however, further classified students into three types of music student status: music, high aspiring, and low aspiring students (Definition of Key Terms). Third, the labels used to identify the school subjects were amended to fit the Singaporean school context. "General music", instead of "music", was used in order to help respondents to better differentiate classroom music from formal or informal music instruction outside of school.

Changes made. The research theoretical framework of this study was based on Eccles et al.'s (1983) expectancy-value framework, specifically motivational constructs related to competence beliefs and task values. Original items developed by McPherson were related to other motivational constructs such as effort (M23) and self-efficacy (M25 and M26) were not used in the web-based survey questionnaire. In addition, McPherson investigated the interplay between internal personal factors and external factors such as parental expectations (M31, M32,

and M33) and level of involvement in extracurricular and outside school activities (M36) through their survey. These items were not adapted for use in the web-based survey questionnaire as they were beyond the scope of this study. Table 3.4 provides a summary of changes made to the current survey questionnaire in comparison with items developed by McPherson.

Table 3.4

Summary of Changes Made to the Wording of McPherson's (2007) Questionnaire Items by the Researcher before Pilot Study

McPherson's (2007) Items	Researcher's Items	Reasons for Amendment
What are you good at? (Competence beliefs)		
M12: How good are you at each of these subjects?	R17: How good are you in:	Reword to fit local context
M27: If you were to order all the students in your class from best to worst, where would you put yourself for each of the following subjects?	R 19: If you were to arrange all students in your class from best to worst, where would you put yourself for each of these subjects?	Reword to fit local context
	R 18: Compared to your other subjects, how good are you in each of the following subjects:	New item
What you expect? (Expectancies for Success beliefs)		
M28: Compared to other subjects in your class, how well do you expect to do this year in each of the following subjects?	R 27: Compared to other students in your class, how well do you expect to do this year in:	Change from "subjects" to "students"
	R28: How well do you think you will do in these subjects at the End-of-Year examination next year?	New item
What you find difficult? (Task Difficulty perception)		
M16: How hard do you have to try to do well in:	Beyond scope of study ("effort" construct)	Not used
M7: Outside school, how interested are you in:	Beyond scope of study (interest in outside school activities)	Not used

Table 3.4 (Cont.)

McPherson's (2007) Items	Researcher's Items	Reasons for Amendment
What you enjoy learning? (Intrinsic value)		
	R 13: Compared to your other school subjects, how interested are you in:	New item
M23: How worthwhile for you is the amount of effort it takes to do the following subjects?	Beyond scope of study ("effort" construct)	Not used
What you do outside school?		
M34: Outside of school, do you get lessons in the following subjects?	R 29: Outside school, I receive lessons in:	Reword to fit local context
M37: Do you or your family have any musical instrument(s) at home: If yes, what instruments?	R 33: What musical instruments do you or your family own at home?	Reword to fit local context
M38: Are you learning to play a musical instrument (or sing)? If yes, where do you learn it? If no, would you like to learn if given the chance?	R 30: If you are receiving music lessons outside school, what musical instrument(s) do you learn?	Reword to fit local context
	R 32: Who in your family currently or previously played a musical instrument?	New item

Questionnaire structure. The web-based survey questionnaire comprised ten sections with a total of 33 items assessing two expectancy-related beliefs factors (self-concept of competence and expectancies for success), a task difficulty factor (perceptions of task difficulty), and three task value factors (importance, interest, usefulness) to determine adolescents' beliefs and values about music as compared to five other school subjects according to gender and music student status. The response options included only 5-point Likert scale items. As with questionnaire by McPherson, each of the ten sections was organized within subheadings in order to help participants to understand the content of each section. In addition, the web-based survey also included administrative and consent instructions that were found at the beginning of the

survey. Table 3.5 presents an overview of the table of specifications of the current web-based survey questionnaire.

Table 3.5

Table of Specification for the Current Questionnaire Items

Survey Section	Expectancy-Value Constructs	Item Number	Format
Students' Consent			Single answer response (I agree)
General Directions			Single answer response (continue)
Personal Details	Gender	1	Single answer response
	Ethnicity	2	Single answer response
	School level	3	Single answer response
	Stream	4	Single answer response
Your Co-curricular Activities (CCA)	Extracurricular activities categories	5	Single answer response
	Types of arts CCA	6	Response to Q6-9 depends on
	Types of sport/games CCA	7	Q5's response
Your Co-curricular Activities (CCA)	Types of uniformed group CCA	8	Response to Q6-9 depends on
	Types of clubs/societies CCA	9	Q5's response
	Instruments learned through music CCA	10	Open-ended (after Q6)
What are you good at?	Competence beliefs	17, 18, 19	5-pt Likert
What you find difficult?	Perceived task difficulty	20, 21, 22	5-pt Likert
What you find useful?	Utility value	23, 24, 25	5-pt Likert
What you expect?	Expectancy for success	26, 27, 28	5-pt Likert

Table 3.5 (Cont.)

Survey Section	Expectancy-Value Constructs	Item Number	Format
What you do outside of school?	Participation of outside school activities	29	Multiple answer response
	Instruments learned outside school	30	Open-ended
	Willingness to engage in outside school activities	31	5-pt Likert
Family	Immediate family member's music background	32	Multiple answer response
	Ownership of musical instruments at home	33	Multiple answer response

Reliability and Validity

Reliability of scale. In order to ensure greater reliability of the research instrument, a number of features were incorporated into the design of the survey questionnaire. First, a key criterion for internal consistency reliability was that there should be adequate items. New items (e.g., Q18 and Q28) were created such that there would be at least three items for each of the six motivational construct.

Second, the school subjects were randomly rotated for each item on the questionnaire to ensure that participants would respond consistently and with good understanding of each item. Next, I focused on writing items clearly and making the instructions easily understood such that participants would know exactly what to do during the survey. The pilot study, as described later, was used to verify that participants understood both the directions and questions in the survey, and several changes were made after the pilot study.

Finally, internal reliability consistency was reinforced through the standardization of administrative procedures of the survey. The researcher administered all 47 survey sessions and also developed a procedural manual to ensure all participants experienced similar administrative

instructions and procedures when completing the web-based questionnaires in the computer labs. In addition, participants were also told of the generic subject, rather than music-related nature of the survey to prevent any response biasness.

After data collection, reliability analyses were conducted on the original 18 items that addressed six motivational constructs. Internal consistency reliability is the extent to which the items in a measure are similar to one another in content (Gay & Airasian, 2003). A summary of the items addressing each construct as well as the calculated Cronbach's alpha based on the standardized items is presented in Table 3.6. Each of the six motivational constructs demonstrated high reliability across the different school subjects, ranging from .82 to .96. The internal consistency reliability for competence beliefs and expectancies for success scales ranged from .86 to .93 across school subjects whereas task difficulty construct had Cronbach's alpha between.82 and .94. For task value items, the internal consistency reliabilities for importance, interest, and usefulness constructs ranged from .83 to .96. All 18 items were, therefore, included in subsequent data analysis.

Table 3.6

Reliability Analysis of the Researcher's Survey Items in Each School Subject

Questionnaire Items	Subjects	Cronbach's Alpha (Standardized Items)
Competence		
17: How good are you in:	Music	.90
18: Compared to your other subjects, how good are you in: *(new item)*	English	.86
	Math	.88
19: If you were to arrange all students in your class from best to worst, where would you put yourself for each of these subjects?	Science	.87
	PE	.91
	Art	.90

Table 3.6 (Cont.)

Questionnaire Items	Subjects	Cronbach's Alpha (Standardized Items)
Expectancies for Success		
26: How well do you think you will do in these subjects this year?	Music	.92
	English	.90
27: Compared to other students in your class, how well do you expect to do this year in:	Math	.93
	Science	.91
28: How well do you think you will do in these subjects at the End-of-Year examination next year? *(new item)*	PE	.92
	Art	.92
Task Difficulty		
20: How hard are the following subjects for you?	Music	.87
	English	.90
21: Compared to your other school subjects, how hard are the following:	Math	.94
	Science	.91
22: How hard do you have to work to get excellent results in:	PE	.88
	Art	.82
Interest		
11: At school, how much do you like learning:	Music	.91
	English	.93
12: At school, how interesting do you find:	Math	.95
	Science	.93
13: Compared to your other school subjects, how interested are you in: *(new item)*	PE	.94
	Art	.96
Importance		
14: For you, how important is it to learn:	Music	.90
	English	.85
15: For you, how important is it to be good at:	Math	.87
	Science	.86
16: For you, how important is it to get good school results in:	PE	.88
	Art	.92
Usefulness		
23: In general, how useful is what you learn in each of these subjects? *(new item)*	Music	.87
	English	.83
24: How useful is learning the following subjects for your daily life outside school?	Math	.85
	Science	.83
25: How useful do you think learning the following subjects will be for you when you leave school and get a job?	PE	.86
	Art	.83

Validity of scale. Validity is defined as the extent to which it measures what it was intended to measure (Mertens, 2010). This section discusses four types of validity: content validity, face validity, concurrent validity, and construct validity.

Content validity is the degree to which a test measures an intended content area (Gay & Airasian, 2003). The web-based survey, which was adapted and modified from motivational scales developed by Eccles and Wigfield (1995) and McPherson (2007). This permitted an examination of a comprehensive set of motivational constructs based on Eccles et al. (1983)'s expectancy-value theoretical framework that represented intrinsic, attainment, and utility reasons for engaging in a task as well as expectancy-related beliefs that determined achievement-related behaviors.

Face validity is defined as reflecting the extent to which a measure reflects what it is intended to measure (Nunnally and Bernstein, 1994). As seen in the survey questionnaire, there was a close linguistic correspondence between the items themselves and the six motivational sub-constructs. Additionally, the web-based survey also presented items for each motivational sub-construct grouped together under clear headings.

Concurrent validity was confirmed by testing the extent to which these scales relate in the predicated directions to Q31. According to Eccles et al. (1983), task values and competence beliefs predict individuals' intention to enroll in future instruction. The findings using linear multiple regressions in Chapter 4 found that both competence beliefs and task values for music predicted students' intention to receive instrumental music instruction outside of school (Q31). Furthermore, concurrent validity was also provided by the expected gender difference and developmental declines in each scale that would be discussed in Chapter 4. Taken together, the scales demonstrated concurrent validity as explained by the positive correlation between students'

competence beliefs and task values and their intention to enroll in instruction of particular school subject outside of school (Q31).

Construct validity refers to the extent an instrument reflects the construct it is intending to measure (Gay & Airasian, 2003). Vogt (1999) elaborated that construct validity is used to describe a scale that correlates with measures of other variables in ways that are predicted by, or make sense according to, a theory of how the variables are related. Given the fact that the motivational scales developed by Eccles and Wigfield (1995) have been used extensively in various expectancy-value related empirical studies and that McPherson's (2007) survey items have a close correspondence with those of the original items, it was concluded that the motivational variables examined in the current web-based survey questionnaire measured the constructs of expectancies and task values.

Procedures

Gaining Ethics Approval to Conduct Research in Schools

Permission to conduct research in Singapore schools was secured in three phases:

Phase 1: Approval by the Ministry of Education (MOE). The first phase involved obtaining approval from the MOE to conduct research in Singapore schools. Additional documents such as researcher cover letter, dissertation advisor's recommendation letter, research proposal, and research survey instruments were submitted electronically together with the MOE's Request for Approval to Collect Data from Schools Form on April 14, 2009. Another key purpose of this phase was to obtain an authorization letter from the MOE as this was required for the Institutional Review Board (IRB) application in the next phase. This application was approved by the MOE on April 27, 2009 (Appendix C).

Phase 2: Approval by the University's Institutional Review Board (IRB). The second phase involved obtaining approval to conduct research from the University of Illinois at Urbana-Champaign (UIUC) IRB. This involved three steps. First, the researcher completed the UIUC web-based training module on February 8, 2009 in order to fulfill the National Institute of Health (NIH) basic training requirements for undertaking human subjects research. Additional elective modules on international research, internet research, research in public and elementary schools, and research with children were also completed on the same date.

The second step involved submitting a formal application of the Review of Research Involving Human Subjects (Form IRB-1) to the IRB on April 15, 2009. Additional documents such as research survey instruments (prior to be used in the study), and documents that were submitted to the MOE were attached with the application form. The application required the following amendments and provisions: (a) to change "race" to "ethnicity"; (b) to provide a copy of the Research in Schools Form to the Office of School-University Research Relations (OSURR) indicating the Singapore schools involved in the study; (c) to attach a parental consent form; and (d) to attach a Waiver or Alteration of Informed Consent Form.

The final step was to obtain final approval from IRB that would satisfy all requirements and regulations from the organization. This application was approved by the IRB on May 15, 2009 (Appendix C).

Phase 3: Approval by school principals. Upon receiving official approval from the IRB and the MOE, the final phase involved obtaining permission from school principals to conduct research in their schools. The researcher contacted principals from schools that were sampled from the sampling frame via email to inform them about the nature of the study, the procedures that would be used to undertake the research, and to seek their help in identifying music periods

in which students could complete the web-based survey questionnaire. Principals were also informed that responses from student respondents would be strictly confidential and would not be shared with anyone outside the research team unless required by law. Responses were treated as strictly confidential and would be held in separate computer files and kept not on computers but in a locked filing cupboard in the researcher's office. Finally, principals were informed that participating schools would be given a summative report at the end of the study.

Pilot Study

According to Iraossi (2006), the pilot study serves to clarify whether there are any important issues or aspects of the constructs being measured that may have been overlooked. The pilot study that was conducted in February and March of 2009 provided the opportunity for the researcher to do a research trial with three broad goals: 1) to determine if items would be clear, easy, and unbiased to participants; 2) to determine if participants could complete the survey questionnaire within 20-minutes; and 3) to ensure that items would not cause unnecessary irritation, embarrassment, or confusion to participants.

Before the conducting of the pilot study, the researcher first seek expert content evaluation of the survey items from three specialist teachers, comprising two music specialists and a non-music senior teacher in Singapore. The first music specialist teacher possessed a master degree in music education and has gained numerous years of secondary teaching experience both as chair of an aesthetic department and a music curriculum planning officer at the MOE. The second specialist teacher was an experienced primary school music specialist holding an honors degree in music education. The third specialist teacher was the chair of a secondary school discipline department and has extensive experiences managing secondary school students from all three academic streams. After reviewing the survey items, all three

specialist teachers unanimously agreed that the levels of difficulty, clarity, and comprehensibility of each item in the web-based questionnaire were appropriate in relation to the targeted population. Minor changes to current survey items were summarized in Table 3.7.

The pilot study with Primary 6, Secondary 1, and Secondary 2 Singaporean students was held in March 2009. Four music teachers (one primary and three secondary) agreed to volunteer and they were given a detailed instruction sheet on step-by-step procedures to administer the web-based survey questionnaire with their students in the school's computer laboratory. They were also asked specifically to record the duration students took to complete the questionnaire and also write down queries raised by students.

A total of 228 Primary 6, Secondary 1, and Secondary 2 participants representing all three education streams responded to the pilot study. The survey reported high response rates of 94.5%. In addition, the pilot study also confirmed the feasibility of using commercially supported web-based survey for the study as it had the capacity to have more than 40 participants doing the same survey questionnaire simultaneously.

Three key issues were highlighted from the pilot study. First, the data collected from the survey software revealed that some respondents did not provide accurate personal information. For example, some respondents provided incorrect grade level or education streams on the survey. A recommendation would be to ensure that demographic data on the survey software was consistent with the actual demographic data on the class attendance list. Any instances of incorrect or inaccurate demographic information would have to be cleaned up immediately at the end of each survey session.

Second, a preliminary result analysis highlighted a lack of consistency of two related items: item 29*: Outside of school, do you receive lessons in (mathematics, musical instruments,*

etc.) and item 32*: If you are learning to play a musical instrument or sing outside of school, what are these instruments?* There were instances where participants who did not receive instrumental music instruction outside of school also responded to Q32. I then reconfigured the survey software feature such that Q32 would appear only when participants responded to Q29.

Finally, there was a lack of clarity in four items. For Q18*: Compared to your other subjects, how good are you in each of the following subjects*. Some participants perceived this item as a ranking of seven school subjects but only five answer choices were available for their responses. This item was subsequently reworded to Q18*: Compared to your other subjects, how good are you in*. In addition, some respondents had difficulty understanding "How hard …" that was used in Q20, 21, and 22. "How hard…" was later reworded to "How difficult", after consulting the specialist teachers and music teachers.

Changes made to survey items. Several changes were made to the current questionnaire items after the completion of the pilot study. Table 3.7 presents a summary of changes made to the current survey questionnaire items before and after the pilot study.

Table 3.7

Summary of Changes Made to the Wording of Current Questionnaire Items Before and After the Pilot Study

Before Pilot Study	After Pilot Study	Reasons for Amendment
What you expect? (Expectancies for Success beliefs)		
26: How well do you think you will do in these subjects this year?	How well do you expect to do at the End-of-Year examination this year in:	Suggested by specialist teachers
27: Compared to other students in your class, how well do you expect to do this year in:	Compared to other students in your class, how well do you expect to do at the End-of-Year examination this year in:	Suggested by specialist teachers

Table 3.7 (Cont.)

Before Pilot Study	After Pilot Study	Reasons for Amendment
What you find difficult? (Task Difficulty perception)		
20: How hard are the following subjects for you?	How difficult are the following subjects for you?	Suggested by specialist teachers and respondents
21: Compared to your other school subjects, how hard are the following:	Compared to your other subjects, how difficult are the following?	Suggested by specialist teachers and respondents
22: How hard do you have to work to get excellent results in:	At school, how difficult is it for you to score high marks in:	Suggested by specialist teachers and respondents
What you find important? (Attainment value)		
15: For you, how important is it to be good at:	For you, how important is it to master:	Suggested by specialist teachers and dissertation director
16: For you, how important is it to get good school results in:	For you, how important is it to score high marks in:	Suggested by specialist teachers and dissertation director
What you find useful? (Utility value)		
23: In general, how useful is what you learn in each of these subjects?	At school, how useful is the information you learn in:	Suggested by specialist teachers and dissertation director
24: How useful is learning the following subjects for your daily life outside school?	How useful is learning the following subjects for your everyday life outside school?	Reword to fit local context
What you do outside school?		
30: If you are receiving music lessons outside school, what musical instrument(s) do you learn?	Include non-Western musical instruments	Suggested by respondents
33: What musical instruments do you or your family own at home?	Include non-Western musical instruments	Suggested by respondents

Administrative Procedures

The duration of the survey administration took approximately four months, beginning with Primary 6 students in early July 2009 (Term 3 of the school calendar year). This was followed by secondary school students at the later part of July 2009. All participants had already experienced at least six months of classroom music instruction during the time when they

responded to the survey questionnaire. For the Primary 6 students, this was the time when they would be starting to do test preparation for the Primary School Leaving Examination (PSLE) in early October. Overall, survey administration for most participating schools was completed by early September with the exception of one school where the survey was administered in mid October.

Prior to survey administration. Prior to the actual administration of the survey, the researcher held briefing sessions with all music teachers who have been appointed by their respective school principals as liaison officers for the project. All music teachers received a data gathering manual that comprised administration checklists and guidelines as well as the parental informed consent letter. Each music teacher was also asked to plan schedule for students to complete the survey at the school's computer laboratory. Furthermore, they were also asked to print and distribute the parental informed consent letters to students at least two weeks before the actual survey administration. By doing so, parents would be able to contact the schools, email or return the attached form to their form teachers if they would not want their child to participate in the study. Subsequent correspondences with teacher teachers were established through email communications and text messaging on cell phones.

A major challenge was the scheduling of 47 survey sessions at seven schools in different locations. Most music teachers were cooperative and supportive towards the survey as they scheduled the survey during students' music period. Two music teachers, however, said their principals were not willing to compromise students' music lesson time for doing the survey. Alternative scheduling was subsequently arranged for students to do the survey questionnaire during their recess breaks or other non-music periods. A suggestion to complete the survey as an

after-school activity was rejected as this would have impact on the external validity of the study when students might not take the survey seriously since it would be done after school hours.

At the beginning of survey. The web-based questionnaire was administered to participants on the date and time agreed upon previously at the school's computer laboratory during the period they normally received music instruction. The researcher administered all 47 survey sessions with students who had not declined their willingness to participate in the survey. The researcher invited all participants to participate in the study, provided a brief overview of the survey, and gave general directions to complete the web-based survey questionnaire. Table 3.8 presents the standard script that was recited to all participants at the beginning of each survey session, whereas Table 3.9 shows the written instructions on the first page of the web-based survey questionnaire.

Table 3.8

Spoken Administrative Instructions Given to Participants

Self-introduction and provision of general directions and reminders:

1. Good morning/afternoon, I am Mr. Koh from the University of Illinois, USA. First, I will like to thank you for agreeing to participate in this survey study. This survey will help you to reflect and discover which subjects you like best and why.
2. The survey will take about 20 minutes and I will like you to be as honest as possible as there's really no right or wrong answers to each question. I will expect everyone to do the survey questionnaire on your own without talking to your friends.
3. Most importantly, please do not rush through the questions as no prize will be given even if you are the first to complete the survey. Do you have any questions at this time?

Get access to the researcher's personal web page:

4. Now, please open your internet browser and enter this web address as shown on the white board. This will bring you to a bright orange colored webpage.

Read instructions from the researcher's personal web page:

5. Now, please spend a few minutes reading the instructions on this webpage (see Table 3.3). Please raise your hand if you have any questions.

Table 3.8 (Cont.)

Get access to the survey site:

1. Please click on the link when you have decided to participate in this survey.

Enter password:

2. The survey site will prompt you for the password. Please enter this password XXXXX as written on the whiteboard.

Commence:

3. Please read these instruction on the screen:

"Welcome! This web-based survey questionnaire takes about 20 minutes to complete. There are no right or wrong answers and no trick questions. Give your best answer without spending too much time on individual questions. Put your hands up if you have any questions. You're ready to begin! Please click "CONTINUE" below."

You may begin doing your survey. Do raise your hand if you have any questions.

Table 3.9

Administrative Instructions found on the Web-based Survey Questionnaire

What's your Favorite Subject?

1. WELCOME!
2. Thanks for taking the time to complete this survey. You have been specifically selected to participate in this study so that we could understand your motivation towards learning different subjects in school (*purpose of the study*).
3. We have already sent your parents a notification letter, including information about your privacy and rights as a research participant (*informed parental consent*).
4. Your responses are completely confidential and there is no information obtained in this study that can be identified with you (*confidentiality of study*).
5. The survey will take about 20 minutes to complete. If you do not want to participate, please close your internet browser now. To participate, please click "I AGREE" below to begin the survey (*research participants' consent*).

One key challenge in administering the web-based survey concerned issues related to computer technology. For example, external factors such as slow internet connection speed, faulty computers in the laboratory, and participants forgetting their login passwords were some

real problems that emerged during the survey administration. The computer laboratory technicians played significant roles in managing and resolving these technical problems. In sum, unforeseen issues related to local equipment and use of computer would be important considerations for future researchers engaging in web-based survey research.

During survey. The researcher walked around the computer laboratory to provide clarifications, monitor participants' pacing in doing the survey, and intervene, if necessary, to minimize any form of inappropriate behavior that could affect external validity of the survey. In cases where participants were found disruptive, the researcher would seek help from subject teachers and/or the computer laboratory technician to ensure that participants would do the survey in the most conducive environment. In addition, an important procedure at this time was the manual counting of participants to ensure that the number of participants aligned with the class attendance list. The class attendance list was used as a cross-referenced document to compare actual demographic data (i.e., gender, grade levels, education streams, and ethnicity) of the participants in each survey session with the data collected by the commercially supported survey software.

At the end of survey. The web-based survey questionnaire was configured such that the University of Illinois homepage would appear upon clicking "Submit" at the last screen of the survey questionnaire. Upon confirming that all participants have completed their survey questionnaire, the researcher gave permission for participants to shut down their computers, thanked them for completing the survey, and then released them for their subsequent lessons. Students who could not complete the survey questionnaire were asked to stay behind to finish the survey under the supervision of the researcher.

Data Processing and Analysis

Data Cleaning

A recommended action after the pilot study was to ensure that the demographic information captured on the commercialized survey software tallied with the actual demographic information on the class attendance list. This action was executed at the end of each survey session. When there were inconsistencies (e.g., data for 42 participants collected when there was 40 participants in a particular survey session), the researcher would compare the recorded data with demographic information on the class attendance list such as gender and ethnicity. Any inaccurate response was deleted after the comparison process. If need to, the researcher manually made amendments to the data when participants did not provide accurate demographic information of themselves (e.g., responded as Express stream participants when they were not). Any changes made to the raw data were accounted for and recorded as brief field notes.

Coding of Data

The commercialized survey software consolidated the collected data into an Excel spreadsheet. The raw data were thoroughly checked for accuracy in terms of demographic information (e.g., gender, grade levels) and any repeated or missing responses from participants were either cleaned up or deleted. The researcher provided a code to each participant, e.g., 7010206: 7 = Secondary 1; 01 = school A; 02 = second Express class; and 06 = sixth participant, so that each individual participant would be accounted for when doing statistical analysis. The coding system for independent variables included the use of numbers and letters, such as gender (1 = male; 2 = female), grade levels (6 = Primary 6; 7 = Secondary 1; 8 = Secondary 2), and music student status (M = Music; H= High Aspiring; L= Low aspiring). Participants' responses to the 5-point Likert scales were entered according to the numbers responded (i.e., 1 to 5). For

questions that permitted multiple responses, 0's and 1's were assigned for non-selected and selected items respectively (e.g., Q29, 32, and 33). Responses for open-ended questions were categorized, coded, and analyzed separately. All inputted data were then imported into SPSS version 17 for Windows for analysis.

Data Analysis

Descriptive statistics involving frequencies and cross-tabulations was used to investigate the demographic profiles of music and non-music students in Singapore (Research Question 1). Univariate approaches to ANOVA with repeated measures 4-factor and standard 3-factor ANOVAs were conducted to determine differences in adolescents' competence beliefs and task values towards learning music and other school subjects as a function of music student status (Research Question 2) and gender (Research Question 4) across Primary 6, Secondary 1, and Secondary 2 levels (Research Question 5). Finally, a linear regression analysis was used to investigate how well competence beliefs and components of task values (independent variables) predicted music and non-music students' intention to enroll in instrumental music instruction outside school (dependent variables) (Research Question 3).

Summary

This methodology chapter discussed the rationale and appropriateness for adopting a quantitative paradigm to examine expectancies and task values that adolescents in Singapore held about learning music and other school subjects across Primary 6, Secondary 1, and Secondary 2 levels according to gender and music student status. A web-based survey method was used and the survey items were an adaptation of existing McPherson's (2007) survey questionnaire items. The researcher has discussed in great length on the item adaption processes and provided reasons for the elimination, retainment, and modification of the earlier survey items.

The survey instrument was valid and reliable as determined by the various tests of validity and computation of internal consistency correlation coefficients using Cronbach's alpha. An important part of the study was the administration of a pilot study with actual Primary 6, Secondary 1, and Secondary 2 students in order to streamline research procedures for the study and to further refine questionnaire items before administering the actual study. Specific sampling procedures in the identification of schools and the selection of music classrooms were also discussed. Results of the descriptive analysis, ANOVA, and linear multiple regressions would be extensively reported in Chapter Four.

CHAPTER 4: RESULTS

This chapter presents result findings based on the five research questions in this study. It is divided into four sections: (a) description of sample; (b) description of music and non-music students; (c) univariate approaches to analysis of variance (ANOVA); and (d) linear multiple regression analysis. In order to investigate musical and demographic profiles of Singaporean students (Research Question 1), descriptive statistics involving frequencies, cross-tabulations, and chi-square analysis were used.

An univariate approach to ANOVA with repeated measures 4-factor and standard 3-factor ANVOAs were conducted to determine differences in students' competence beliefs and task values towards learning music and other school subjects as a function of music student status (Research Question 2), gender (Research Question 4) across Primary 6, Secondary 1, and Secondary 2 levels (Research Question 5). A mixed four-factor ANOVA permitted an examination of students' competence beliefs and task values for different school subjects (within subjects) as a function of music student status, gender, and grade levels (between subjects). On the other hand, the standard 3-factor ANOVA further determined if there was any significant main effects or interactions on individual expectancy-value motivation within each school subject as a function of music student status, gender, and grade levels.

Finally, linear multiple regression analysis was used to determine if students' choice of achievement tasks in each school subject (dependent variables) was most directly predicted by their competence beliefs on the school subject (independent variables) and the value they attached to it (independent variables). In addition, regression analysis was also conducted to investigate how well competence beliefs and the components of task value (independent

variables) predicted music and non-music students' intention to receive instrumental music instruction outside school (dependent variables) (Research Question 3).

Description of Sample

This section addresses the first research question, i.e., to investigate the typical profiles of music and non-music students. Topics discussed included an overview of the demographic profile of music and non-music students according to gender, ethnicity, education streams, grade levels, music student status, as well as the types of co-curricular activities (CCAs) participated in school. The analysis also examined family's ownership of musical instruments at home and students' immediate family members' instrumental musical experiences. This section also provides further information on music students' involvements of music CCAs in school and private music instruction outside of school, as well as the musical instruments that these students learned both in and outside of school.

2,152 students from 47 music classrooms were invited to participate in the survey, of which 2,017 students successfully completed the web-based survey (93.7% response rate). As 284 students from one secondary school did not receive music lessons during the time when they did the survey, responses from these students were not included in the subsequent statistical analysis. In addition, 20 Primary 6 students declined to participate in the study and the remaining students who failed to complete the survey were largely absentees due to medical reasons or other school commitments such as competitions and performances. Missing responses or those that had been completed incorrectly were not used in the data analysis. Overall, a total of 1,733 students across Primary 6, Secondary 1, and Secondary 2 levels from three primary schools and four secondary schools participated in the study.

Gender and Grade Levels

Table 4.1 shows the breakdown of the sample according to gender and grade levels. The sample included 553 Primary 6, 579 Secondary 1, and 601 Secondary 2 students. There was a higher percentage of females than males at the Primary 6 (males: 48.8%; females: 51.2%) and Secondary 1 (males: 46.5%; females: 53.5%) levels.

Table 4.1

Breakdown of Sample by Gender and Grade Levels

	Grade Levels							
	Primary 6		Secondary 1		Secondary 2		All	
Gender	n	%	n	%	n	%	N	%
Male	270	48.8	269	46.5	335	55.7	874	50.4
Female	283	51.2	310	53.5	266	44.3	859	49.6
All	553	100.0	579	100.0	601	100.0	1733	100.0

Ethnicity and Grade Levels

Table 4.2 shows the breakdown of the sample according to ethnicity and grade levels. The four major ethnic groups in Singapore were represented in the sample with 78.8% Chinese, 13.4% Malays, 4.6% Indians, and 3.2% other ethnicities.

Table 4.2

Breakdown of Sample by Ethnicity and Grade Levels

	Grade Levels							
	Primary 6		Secondary 1		Secondary 2		All	
Ethnicity	n	%	n	%	n	%	N	%
Chinese	413	74.7	476	82.2	476	79.2	1365	78.8
Malays	90	16.3	55	9.5	87	14.5	232	13.4
Indians	28	5.1	30	5.2	22	3.7	80	4.6
Others	22	4.0	18	3.1	16	2.7	56	3.2
All	553	100.0	579	100.0	601	100.0	1733	100.0

Education Streams and Grade Levels

Table 4.3 shows the breakdown of the sample according to education streams and grade levels from the four participating secondary schools. Students from the Express stream made up the highest percentage (Sec 1: 51.5%; Sec 2: 51.2%) in the sample, and this was followed by

those from the Normal Academic (Sec 1: 25.6%; Sec 2: 25.8%), and Normal Technical (Sec 1: 23.0%; Sec 2: 23.0%) streams.

Table 4.3

Breakdown of Sample by Secondary School Education Streams and Grade Levels

	Grade Levels					
	Secondary 1		Secondary 2		All	
Ethnicity	n	%	n	%	N	%
Express	298	51.5	308	51.2	606	51.3
Normal Academic	148	25.6	155	25.8	303	25.7
Normal Technical	133	23.0	138	23.0	271	23.0
All	579	100.0	601	100.0	1180	100.0

Description of Music and Non-music Students

Three major groupings were used for data analysis: music, high aspiring, and low aspiring students. Music students were currently receiving formal musical instruction either through music CCAs in school or private music instruction outside of school. The classification for non-music students were based on Q31: *If you were given an opportunity to learn outside of school, how much might you want to learn (musical instrument)* in the web-based survey questionnaire. Non-music students who provided ratings of 4 or 5 (out of 5-point Likert Scale) to Q31 were categorized as high aspiring students, whereas those non-music students who provided ratings of 1, 2 or 3 for Q31 were categorized as low aspiring students.

Ethnicity

Table 4.4 presents demographic information of three types of music student status according to ethnicity. There was a total of 475 music students (27.4% of participants) who currently received formal musical instruction in and/or out of school. Among non-music students, there was a higher percentage of low aspiring students (39.3% of participants) as compared to high aspiring students (33.3% of participants). Visual inspection of Table 4.4 shows that a higher proportion of Chinese (29.8%) and the Others (32.1%) ethnicities were music students as

compared to the racial minorities (Malays: 16.8%; Indians: 13.8%). There was, however, a higher proportion of racial minorities (Malays: 49.1%; Indians: 42.4%) who belonged to the high aspiring group when compared to Chinese (30.1%) and the Others (32.1%) ethnicities. To determine whether there was a relation between ethnicity and music student status, a chi-square test of independence was performed. The outcomes of the analysis indicated that the relation between music student status and ethnicity was significant, χ^2 (6, N = 1733) = 44.43, p < .001.

Table 4.4

Breakdown of Sample by Music Student Status and Ethnicity

Music Student Status	Ethnicity								All	
	Chinese		Malays		Indians		Others			
	n	%	n	%	n	%	n	%	N	%
Music	407	29.8	39	16.8	11	13.8	18	32.1	475	27.4
High Aspiring	411	30.1	114	49.1	34	42.4	18	32.1	577	33.3
Low Aspiring	547	40.1	79	34.1	35	43.8	20	35.8	681	39.3
All	1365	100.0	232	100.0	80	100.0	56	100.0	1733	100.0

Gender

Table 4.5 presents demographic information of three types of music student status according to gender. There was a larger proportion of female music students (39.5%) as compared to male music students (15.5%). The reverse findings were true when there was a larger proportion of males (84.5%) as compared to females (60.5%) who were non-music students. More than half of all males (52.3%) were low aspiring students. To determine whether there was a relation between gender and music student status, a chi-square test of independence was performed. The outcomes of the analysis indicated that the relation between music student status and gender was significant, χ^2 (2, N = 1733) = 166.75, p < .001.

Table 4.5

Breakdown of Sample by Music Student Status and Gender

Music Student Status	Gender				All	
	Male		Female			
	n	%	n	%	N	%
Music	136	15.5	339	39.5	475	27.4
High Aspiring	281	32.2	296	34.5	577	33.3
Low Aspiring	457	52.3	224	26.0	681	39.3
All	874	100.0	859	100.0	1733	100.0

Secondary Education Streams

Table 4.6 presents demographic information of three types of music student status according to secondary education streams. Visual inspection of Table 4.6 shows that a larger proportion (43.1%) of the more academically able Express stream students was receiving music instruction in or outside of school as compared to the other two education streams (Normal Academic: 19.8%; Normal Technical: 11.1%). Additionally, a larger proportion of students from the Normal streams was high aspiring (Normal Academic: 41.6%; Normal Technical: 38.6%) and low aspiring (Normal Academic: 36.9%; Normal Technical: 52.0%) students. Furthermore, more than half (52.0%) of all Normal Technical participants were categorized as low aspiring students. To determine whether there was a relation between education streams and music student status, a chi-square test of independence was performed. The outcomes of the analysis indicated that the relation between music student status and education streams was significant, χ^2 (4, N = 1180) = 117.35, $p < .001$.

Table 4.6

Breakdown of Sample by Secondary School Education Streams and Music Student Status

Music Student Status	Education Streams						All	
	Express		Normal Academic		Normal Technical			
	n	%	n	%	n	%	N	%
Music	261	43.1	60	19.8	30	11.1	351	29.7
High Aspiring	158	26.1	126	41.6	100	36.9	384	32.6
Low Aspiring	187	30.8	117	38.6	141	52.0	445	37.7
All	606	100.0	303	100.0	271	100.0	1180	100.0

Family Ownership of Musical Instruments at Home

Of the total sample analyzed, 57.1% mentioned that they had at least one musical instrument at home, whereas 42.9% indicated they did not. Music students had a higher percentage (36.7%) of musical instrument ownership at home as compared to non-music students as seen in Table 4.7 (high aspiring: 34.1%; low aspiring: 29.2%). Additionally, 34.1% of high aspiring students and 29.2% of low aspiring students owned at least one musical instrument at home despite not actively taking music instruction either in or outside of school. To determine whether there was a relation between family ownership of musical instrument and music student status, a chi-square test of independence was performed. The outcomes of the analysis indicated that the relation between music student status and family ownership of musical instrument was significant, χ^2 (2, N = 1733) = 132.69, $p < .001$.

Table 4.7

Family Ownership of Musical Instruments by Music Student Status (Q33: What musical instruments do you or your family own at home?)

Music Student Status	Families Owning Musical Instruments			
	No instrument		At least one instrument	
	n	%	n	%
Music	112	15.0	363	36.7
High Aspiring	239	32.2	338	34.1
Low Aspiring	392	52.8	289	29.2
Total Average	743	42.9	990	57.1

Overall, as seen in Table 4.8, piano/keyboard (34.8%) and guitar (27.5%) were the most owned instruments by families of both music and non-music students. The least owned instruments at home were brasses (2.0%), ethnic Malay (1.7%), and ethnic Indian (0.9%) instruments. The "others" instruments (9.1%) were likely to be classroom instruments, such as recorder, harmonica, or pianica. Among non-music students, the proportion of family ownership of piano/keyboard was the highest (high aspiring: 34.1%; low aspiring: 33.6%) as compared to the other musical instruments.

Table 4.8

Instruments Owned by Families according to Music Student Status (Q33: What musical instruments do you or your family own at home?)

Instrument Ownership	Music Student Status						All	
	Music		High Aspiring		Low Aspiring			
	n	%	n	%	n	%	N	%
Piano/Keyboard	238	36.1	171	34.1	138	33.6	547	34.8
Guitar	162	24.5	155	30.9	115	28.0	432	27.5
Strings	81	12.3	26	5.2	17	4.1	124	7.9
Ethnic Chinese	47	7.1	28	5.6	25	6.1	100	6.4
Woodwinds	36	5.5	34	6.8	33	8.0	103	6.5
Percussion	34	5.2	9	1.8	11	2.7	54	3.4
Brass	13	2.0	11	2.2	8	1.9	32	2.0
Ethnic Malay	5	0.8	13	2.6	8	1.9	26	1.7
Ethnic Indian	3	0.5	6	1.2	5	1.2	14	0.9
Others	41	6.2	49	9.8	51	12.4	141	9.0
All	660	100.0	502	100.0	411	100.0	1573	100.0

Instrumental Musical Experiences of Immediate Family Members

As seen in Table 4.9, there were more music students with at least one immediate family member (37.1%) having current or previous instrumental musical experiences as compared to non-music students (high aspiring: 33.5%; low aspiring: 29.4%) Among families where none of their immediate family members had previous instrumental musical experiences, approximately half of them (47.2%) were those from the low aspiring group. To determine whether there was a relation between immediate family members' musical experiences and music student status, a

chi-square test of independence was performed. The outcomes of the analysis indicated that the relation between music student status and family members' musical experiences was significant, χ^2 (2, N = 1733) = 81.87, p < .001.

Table 4.9

Immediate Family Members with Instrumental Musical Experiences by Music Student Status (Q32: Who in your family currently or previously played a musical instrument)

Music Student Status	Immediate Family Members with Instrumental Musical Experiences			
	None		At least one member	
	n	%	n	%
Music	189	19.7	286	37.1
High Aspiring	318	33.1	259	33.5
Low Aspiring	454	47.2	227	29.4
Total Average	961	100.0	869	100.0

Participation of CCAs in School

Table 4.9 presents the types of CCAs participated by both music and non-music students. Both high aspiring and low aspiring students tended to participate in CCAs related to sports (high aspiring: 42.1%; low aspiring: 49.5%) and uniformed groups (high aspiring: 39.0%; low aspiring: 52.0%). Among music students, a majority of them (74.1%) participated in the performing arts CCAs (music and dance).

Table 4.10

Students' CCAs in School by Music Student Status (Q5: Your core/main CCA is)

Music Student Status	Co-Curricular Activities (CCAs)										All	
	Arts (music and dance)		Clubs		Sports		Uniformed Groups		Non-Participation			
	n	%	n	%	n	%	n	%	n	%	N	%
Music	341	74.1	41	12.1	35	8.4	33	9.0	25	17.2	475	27.4
High Aspiring	70	15.2	136	40.0	176	42.1	144	39.0	51	34.9	577	33.3
Low Aspiring	49	10.7	163	47.9	207	49.5	192	52.0	70	47.9	681	39.3
All	460	100.0	340	100.0	418	100.0	369	100.0	146	100.0	1733	100.0

Music Profiles of Music Students

As seen in Table 4.11, there was a total of 475 students, of which 215 (45.3% of music students) currently received music instruction through music CCAs, 159 (33.5%) received private music instruction outside of school, and the remaining 101 (21.2%) learned music both in and outside of school. By gender, there was a higher percentage of female music students (71.4%) when compared to male music students (28.6%).

Table 4.11

Types of Formal Music Instructions by Music Students (Q6: What's your performing arts CCAs?; Q29: Outside school, I receive lesson in musical instrument)

	Formal Music Instruction						All	
	In School Only		Outside of School Only		Both In and Outside of School			
Gender	n	%	N	%	n	%	N	%
Males	48	22.3	66	41.5	22	21.7	136	28.6
Females	167	77.7	93	58.5	79	78.3	339	71.4
All	215	100.0	159	100.0	101	100.0	475	100.0

CCA music participation. Table 4.12 presents specific music CCAs participated by the 380 music CCA students. Band (38.4%) was the most selected music CCA, and this was followed by choir (18.7%) and *guzheng* ensemble (11.4%). The remaining 31.5% of music CCA students selected Chinese orchestra and the other instrumental ensembles (e.g. string, guitar, *guzheng*, etc.). By gender, the three most selected music CCAs for males were (in rank order) band (54.3%), choir (15.7%), and Chinese orchestra (12.9%), whereas females selected band (37.0%), choir (19.5%), and *guzheng* (13.8%) as their three most preferred music CCAs.

Table 4.12

Music Students' Selection of Music CCAs by Gender (Q6: What's your performing arts CCA?)

Extracurricular Music Activities	Music Students				All	
	Male		Female			
	n	%	n	%	N	%
Band	38	54.3	91	37.0	129	40.8
Choir	11	15.7	48	19.5	59	18.7
Guzheng	2	2.9	34	13.8	36	11.4
String	4	5.7	25	10.2	29	9.2
Chinese Orchestra	9	12.9	15	6.1	24	7.6
Guitar	3	4.3	10	4.1	13	4.1
Handbells	0	0.0	11	4.5	11	3.5
Other Ensembles	3	4.3	12	4.9	15	4.7
All	83	100.0	297	100.0	380	100.0

Instruments learned in and out of school. Q10 asked music students on what musical instruments did they play in their music CCA ensembles. As seen in Table 4.13, the five most popular musical instruments were vocal (18.0%), brass (15.6%), woodwinds (15.3%), Chinese strings (14.1%), and percussion (11.9%). By gender, the three most popular musical instruments for males were (in rank order) brass (26.0%), percussion (16.4%), and vocal (15.1%). Conversely, the three most popular musical instruments for females were (in rank order) vocal (18.9%), woodwinds (16.1%), and Chinese strings (15.4%).

Outside of school (Q30), piano (49.3%), was the most popular instrument, followed by guitar (17.9%) and strings (11.7%). By gender, piano was the most preferred instrument for both males (35.4%) and females (56.5%). Males, in rank order, favored guitar (22.2%) and percussion (18.2%), whereas females favored guitar (17.9%) and strings (11.7%).

Table 4.13

Music Students' Selected Musical Instruments In and Out of School by Gender (Q10: If you join a music CCA, what musical instruments do you learn?; Q30: If you are receiving music lessons outside school, what musical instruments do you learn?)

	In School						Outside of School					
	Male		Female		All		Male		Female		All	
	n	%	n	%	N	%	n	%	n	%	N	%
Brass	19	26.0	32	12.6	51	15.6	6	6.1	0	0.0	6	2.1
Chinese Strings	7	9.6	39	15.4	46	14.1	4	4.0	6	3.1	10	3.4
Chinese Winds	4	5.5	3	1.2	7	2.1	0	0.0	0	0.0	0	0.0
Guitar	3	4.1	10	3.9	13	4.0	22	22.2	30	15.7	52	17.9
Handbells	0	0.0	11	4.3	11	3.4	1	1.0	0	0.0	1	0.3
Percussion	12	16.4	27	10.6	39	11.9	18	18.2	10	5.2	28	9.7
Piano	0	0.0	10	3.9	10	3.1	35	35.4	108	56.5	143	49.3
Strings	4	5.5	28	11.0	32	9.8	9	9.1	25	13.1	34	11.7
Vocal	11	15.1	48	18.9	59	18.0	4	4.0	8	4.2	12	4.1
Woodwind	9	12.3	41	16.1	50	15.3	0	0.0	2	1.0	2	0.7
Others	4	5.5	41	16.1	50	15.3	0	0.0	2	1.0	2	0.7
Total	73	100	254	100	327	100	99	100	191	100	290	100

Analysis of Variance (ANOVA)

Overview

Repeated measures and standard ANOVA were used to address research questions 2: (*To what extent do music and non-music students differ in their attitudes towards studying music in school as compared to other school subjects?*); 4 (*To what extent do male and female students differ in their attitudes towards studying music in school as compared to other school subjects?*); and 5 (*Are there differences in attitudes towards studying music as compared to other school among Singaporean students across Primary 6, Secondary 1, and Secondary 2 levels?*).

Each set of dependant variable (competence beliefs, perceptions of task difficulty, and task values) was analyzed in separate, repeated measures ANOVA. A mixed four-factor ANOVA was used to determine if there were significant main and interaction effects of music student status, gender, grade levels, and school subjects. Each analysis included one within-

subjects factor for school subjects (music, English, mathematics, science, physical education, art) and three between-subjects factors that included music student status (music, high aspiring, low aspiring), gender (male, female), and grade levels (Primary 6, Secondary 1, Secondary 2). Because of the relatively large sample size and large number of possible effects, only effects sizes of more than 1% and significant levels at .05 or below are presented.

Significant interaction effects obtained in the above repeated measures four-way ANOVA were further investigated with standard three-factor between-subjects ANOVA that assessed music student status, gender, and grade levels within each individual school subject. Tukey tests were used for post hoc comparison to determine which of the individual means differed significantly from each other. All assumptions of normality and homogeneity of variance were examined and any violations to these assumptions were discussed in the respective sections.

Students' Competence Beliefs in Different School Subjects

A summary of the mixed four-way ANOVA is presented in Table 4.14. Because the assumption of sphericity was violated (Mauchly W = .753, χ^2 (14) = 484.929, $p < .001$), the main effect of school subjects and their interactions with gender, grade levels, and music student status were assessed with *F* value adjusted using the Greenhouse-Geisser (1959) epsilon, which provides a F-test using a more stringent criterion.

Table 4.14

Four-way Mixed ANOVA of Participants' Competence Beliefs across School Subjects by Music Student Status, Gender, and Grade Levels

Variable	df	Mean Square	F	Sig.	Effect Size η_p^2
Between-subjects effects					
Music Status (M)	2, 1715	158.169	79.720	.001	.085
Gender (G)	1, 1715	49.606	25.003	.001	.014
Grades (Gr)	2, 1715	8.058	4.0641	.017	.005
M X G	2, 1715	1.352	.681	.506	.001
M X Gr	4, 1715	1.755	.885	.472	.002
G X Gr	2, 1715	9.322	4.699	.009	.005
M X G X Gr	4, 1715	2.142	1.079	.365	.003
Error (between)	1715	1.984	--	--	--
Within-subjects effects					
School Subject (S)	4.46, 7651.13	60.804	89.969	.001	.050
S X M	8.92, 7651.13	14.546	21.523	.001	.024
S X G	4.46, 7651.13	25.101	37.140	.001	.021
S X Gr	8.92, 7651.13	3.205	4.742	.001	.006
S X G X M	8.92, 7651.13	.657	.972	.461	.001
S X Gr X M	17.85, 7651.13	.731	1.081	.364	.003
S X G X Gr	8.92, 7651.13	1.010	1.494	.144	.002
S X G X Gr X M	17.85, 7651.13	.729	1.078	.367	.003
Error (within)	7651.13	.676	--	--	--

As seen in Table 4.15, a univariate three-way between-subjects ANOVA was used as a follow-up test to investigate any significant effects for individual school subject resulted from the mixed four-way ANOVA using music student status, gender, and grade levels as between subjects factors. All assumptions of normality and homogeneity of variance were examined and found satisfied.

Table 4.15

Three-way ANOVA of Participants' Competence Beliefs in each School Subjects by Music Student Status, Gender, and Grade Levels

School Subject	Variables	df	Mean Square	F	Sig.	Effect Size η_p^2
Music	Music Status (M)	2,1715	139.037	192.624	.001	.183
	Gender(G)	1,1715	.277	.384	.536	.000
	Grades (Gr)	2,1715	.076	.105	.900	.000
	*GX Gr	2,1715	4.426	6.132	.002	.007
	Error	1715	.722	--	--	--
English	Music Status (M)	2,1715	13.248	18.718	.001	.021
	Gender(G)	1,1715	1.965	2.777	.096	.002
	Grades (Gr)	2,1715	3.856	5.448	.004	.006
	*GX Gr	2,1715	3.148	4.449	.012	.005
	Error	1715	.708	--	--	--
Math	Music Status (M)	2,1715	17.013	16.921	.001	.019
	Gender(G)	1,1715	21.889	21.771	.001	.013
	Grades (Gr)	2,1715	.164	.163	.850	.000
	*GX Gr	2,1715	2.623	2.608	.074	.003
	Error	1715	1.005	--	--	--
Science	Music Status (M)	2,1715	8.260	11.226	.001	.013
	Gender(G)	1,1715	51.823	70.430	.001	.039
	Grades (Gr)	2,1715	1.578	2.145	.117	.002
	*GX Gr	2,1715	1.238	1.682	.186	.002
	Error	1715	.736	--	--	--
physical education	Music Status (M)	2,1715	16.228	19.541	.001	.022
	Gender(G)	1,1715	70.463	84.847	.001	.047
	Grades (Gr)	2,1715	8.516	10.255	.001	.012
	*GX Gr	2,1715	1.172	1.411	.244	.002
	Error	1715	.830	--	--	--
Art	Music Status (M)	2,1715	29.278	29.340	.001	.033
	Gender(G)	1,1715	15.171	15.203	.001	.009
	Grades (Gr)	2,1715	8.168	8.185	.001	.009
	*GX Gr	2,1715	1.221	1.223	.294	.001
	Error	1715	.998	--	--	--

Note. * Only significant ($p < .05$) interaction effects reported

School subjects. As seen in Table 4.14, the main effect size indicated that 5% of the variance in competence beliefs was explained by differences between school subjects, $F(4.46, 7651.13) = 89.969$, $p < .001$, $\eta_p^2 = .050$. This suggests that students' competence beliefs differed across school subjects. Overall, all six school subjects differed significantly from each other as follows (in rank order): physical education (M = 3.61), math (M = 3.56), science (M = 3.52),

English (M = 3.45), music (M = 3.16), and art (M = 3.12). Results also showed significant interactions between school subjects and music student status, $F(8.92, 7651.13) = 21.523$, $p < .001$, $\eta_p^2 = .02$, gender, $F(4.46, 7651.13) = 37.140$, $p < .001$, $\eta_p^2 = .02$, and grade levels, $F(8.92, 7651.13) = 4.742$, $p < .001$, $\eta_p^2 = .006$. The effect size for these two-way interactions was equal or greater than .10 which approximated a small effect size. The three-way and four-way interactions between school subjects and the three independent variables were not significant.

Music student status. As seen in Table 4.14, the main effect size for music student status on competence beliefs was 9%, $F(2,1715) = 79.720$, $p < .001$, $\eta_p^2 = .09$. There was an interaction between school subjects and music student status on competence beliefs and accounted for 2% of the variance, $F(8.92, 7651.13) = 21.523$, $p < .001$, $\eta_p^2 = .02$. Results of the follow-up three-way between-subjects ANOVA as shown in Table 4.15 yielded a significant main effect of music student status on students' competence beliefs in all six subjects and explained by 1% to 18% of the variance. Post hoc test in Table 4.21 revealed music students had significantly higher competence perception in music (mean difference = 1.04), art (mean difference = .43), mathematics (mean difference = .26), and English (mean difference = .17) than low aspiring students. In addition, music students had significantly higher perceptions of competence in music (mean difference = .29), but lower perceived competence in physical education (mean difference =.28) than high aspiring students. When compared to low aspiring students, high aspiring students had significantly higher competence perception in all school subjects: music (mean difference = .75), art (mean difference = .48), English (mean difference = .27), physical education (mean difference = .25), mathematics (mean difference = .22), and science (mean difference = .15).

Gender. One way to examine gender differences is to look at the ranking of competence beliefs between males and females across school subjects. As shown in Table 4.16, males generally perceived physical education and science as two subjects they felt most competent in but viewed music and art as their least competent subjects. On the other hand, females considered mathematics and English as their most competent subjects and found music and art as their least competent subjects for them. Overall, both males and females had low perceived competence in music, ranking them in fifth position out of six school subjects.

Table 4.16

Rank Order of Cumulative Means for Competence Beliefs, Task Difficulty, and Task Values in Each School Subject by Gender

	Females			Males		
Ranking	Competence Beliefs	Task Difficulty	Task Values	Competence Beliefs	Task Difficulty	Task Values
1	Math	Science	English	PE	Art	Science
2	English	Math	Math	Science	English	Math
3	PE	English	Science	Math	Music	English
4	Science	Art	PE	English	Math	PE
5	Music	Music	Music	Music	Science	Music
6	Art	PE	Art	Art	PE	Art

Note. 1 = highest ranking; 6 = lowest ranking.

As seen in Table 4.14, the main effect for gender on competence beliefs was 1%, $F(1, 1715) = 49.606$, $p < .001$, $\eta_p^2 = .01$. There was also an interaction between school subject and gender on competence beliefs, $F(4.46, 7651.13) = 37.140$, $p < .001$, $\eta_p^2 = .02$. Results of the follow-up three-way between-subjects ANOVA as shown in Table 4.15 yielded a significant main effect of gender on students'competence beliefs in four of six school subjects and explained by 1% to 5% of the variance. As seen in Table 4.22, males had significantly higher perceived competence in physical education (mean difference = .37), science (mean difference = .33), and mathematics (mean difference = .15) than females, whilst females had higher perceived

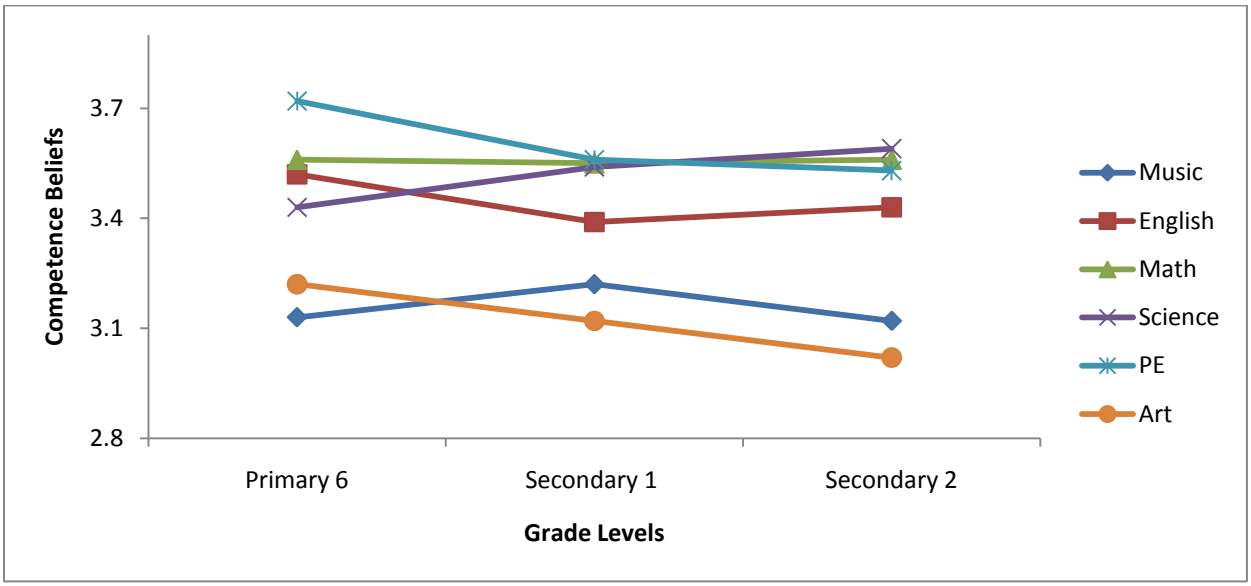
competence in art (mean difference = .31) (Table 4.22). There was no significant difference in the learning of music (p = .536) and English (p = .096) between both genders.

Grade levels. Figure 4.1 presents a graphic representation of students'competence beliefs according to grade levels. A visual inspection shows differences in students' perceptions of competence for English, physical education, and art across Primary 6, Secondary 1, and Secondary 2 levels.

As seen in Table 4.14, the main effect size for grade levels on competency beliefs was not significant (p = .017), suggesting that there was no overall significant decline in participants' competency beliefs across the three grade levels. However, 1% of the variance was explained by the interaction between school subject and grade levels, $F(8.92, 7651.13) = 4.742$, $p < .001$, $\eta_p^2 = .006$. Results of the follow-up three-way between-subjects ANOVA as shown in Table 4.15 yielded a significant main effect of grade levels on participants' competence beliefs in three of six subjects and explained by 1% of the variance. Post hoc as shown in Table 4.23 revealed that Secondary 1 participants had lower perceived competence in English (mean difference = .13) than Primary 6 participants over the primary-secondary transition. On the other hand, Secondary 2 participants had lower perceived competence in art (mean difference = .21) and physical education (mean difference = .19) than Primary 6 participants. There were no significant difference across Primary 6, Secondary 1, and Secondary 2 levels for music (p = .900), mathematics (p = .850), and science (p = .117).

Figure 4.1

Changes in Competence Beliefs in Each School Subject across Grade Levels

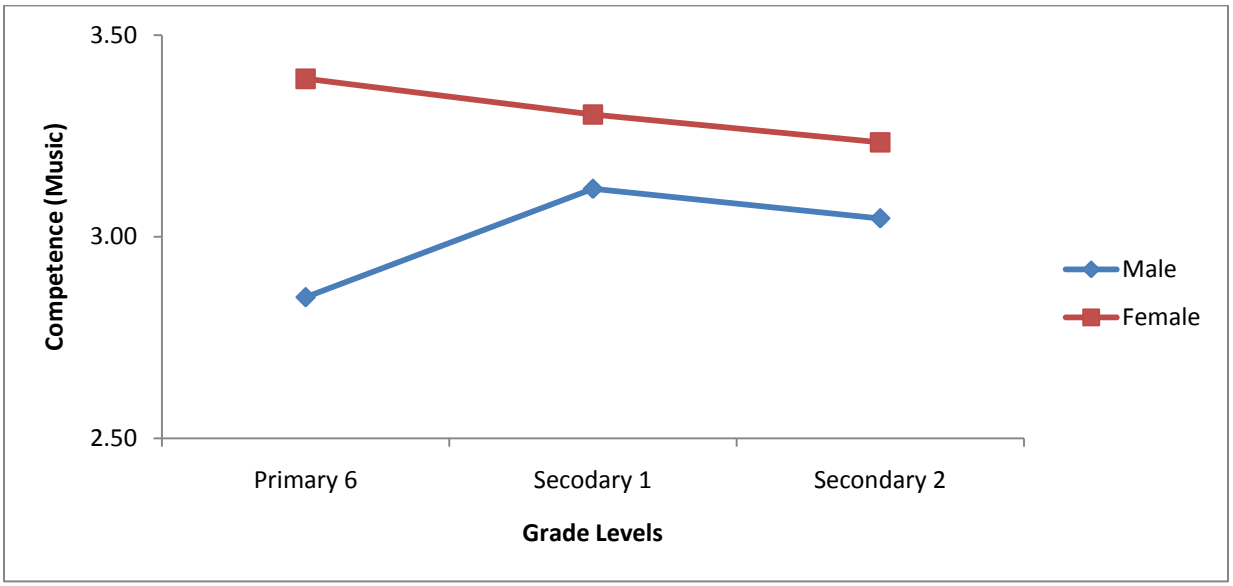


Interactions. As seen in Table 4.14, a further 1% of the variance was explained by the interaction between gender and grade levels on competence beliefs, $F(2,1715) = 4.699$, $p = .005$, $\eta_p^2 = .01$. All other two-way, three-way, and four-way interactions were non-significant. Results of the three-way between-subjects ANOVA as shown in Table 4.15 revealed that 1% of variance was explained by the interaction between gender and grade levels on competence beliefs for music, $F(2,1715) = 6.132$, $p = .002$, $\eta_p^2 = .007$.

As seen in Figure 4.2, the mean ratings for perceived competence in music among Secondary 1 male students were higher than those in the Primary 6 level ($p = .005$). There was, however, no difference in mean ratings between Secondary 1 and Secondary 2 male students ($p = .636$). On the other hand, there was no significant difference in female students' mean ratings for perceived competence in music at each of Primary 6-Secondary 1 ($p = .460$), Secondary 1-Secondary 2 ($p = .632$), and Primary 6-Secondary 2 ($p = .104$) levels. Overall, females had significant higher competence beliefs for music than males at Primary 6 (mean difference = .55), Secondary 1 (mean difference = .19), and Secondary 2 (mean difference = .19) levels.

Figure 4.2

Interaction between Gender and Grade Levels on Participants' Competence Beliefs for Music



Students' Perceptions of Task Difficulty in Different School Subjects

A summary of effects from the 2 (gender) X 3 (grade levels) X 3 (music student status) X 6 (school subjects) mixed four-way ANOVA is presented in Table 4.17. Because the assumption of sphericity was violated (Mauchly W = .681, χ^2 (14) = 659.271, $p < .001$), the main effect of school subject and its interaction with gender, grade levels, and music student status were assessed with *F* value adjusted using the Greenhouse-Geisser (1959) epsilon, which provides a F-test using a more stringent criterion.

Table 4.17

Four-way Mixed ANOVA of Participants' Task Difficulty Perceptions across School Subjects by Music Student Status, Gender, and Grade Levels

Variable	df	Mean Square	F	Sig.	Effect Size
		Between-subjects effects			
Music Status (M)	2, 1715	46.007	21.263	.001	.024
Gender (G)	1, 1715	41.224	19.052	.001	.011
Grades (Gr)	2, 1715	16.786	7.758	.001	.009
M X G	2, 1715	2.099	.970	.379	.001
M X Gr	4, 1715	5.260	2.431	.046	.006
G X Gr	2, 1715	6.563	3.033	.048	.004
M X G X Gr	4, 1715	.941	.435	.783	.001
Error (between)	1715	2.164	--	--	--
		Within-subjects effects			
School Subject (S)	4.27,7330.45	138.639	127.736	.001	.069
S X M	8.55,7330.45	14.215	13.097	.001	.015
S X G	4.27,7330.45	34.966	32.216	.001	.018
S X Gr	8.55,7330.45	14.040	12.936	.001	.015
S X G X M	8.55,7330.45	1.762	1.624	.107	.002
S X Gr X M	17.10,7330.45	1.840	1.695	.036	.004
S X G X Gr	8.55,7330.45	.930	.857	.559	.001
S X G X Gr X M	17.10,7330.45	1.098	1.011	.442	.002
Error (within)	7330.45	1.085	--	--	--

As seen in Table 4.18, a univariate three-way between-subjects ANOVA was used as a follow-up test to investigate significant effects for individual school subject resulted from the mixed four-way ANOVA using music student status, gender, and grade levels as between subjects factors. All assumptions of normality and homogeneity of variance were examined and found satisfied with these exceptions: the assumption of homogeneity of variance had been violated for all school subjects except PE. It was, however, found that the ratio between the largest and the smallest variance in each of the remaining five school subjects were less than the predetermined value of 3.0. This suggests that ANOVA results could be interpreted for these subjects despite the violation of homogeneity.

Table 4.18

Three-way ANOVA of Participants' Task Difficulty Perceptions in each School Subjects by Music Student Status, Gender, and Grade Levels

School Subject	Variables	df	Mean Square	F	Sig.	Effect Size η_p^2
Music	Music Learner(M)	2,1715	85.869	98.369	.001	.103
	Gender(G)	1,1715	2.495	2.858	.091	.002
	Grades (Gr)	2,1715	5.028	5.760	.003	.007
	*M X Gr	4,1715	2.086	2.390	.049	.006
	Error	1715	.873	--	--	--
English	Music Learner(M)	2,1715	1.077	.941	.390	.001
	Gender(G)	1,1715	1.258	1.099	.295	.001
	Grades (Gr)	2,1715	2.227	1.945	.143	.002
	*M X Gr	4,1715	.870	.760	.552	.002
	Error	1715	1.145	--	--	--
Math	Music Learner(M)	2,1715	10.375	6.712	.001	.008
	Gender(G)	1,1715	43.687	28.266	.001	.016
	Grades (Gr)	2,1715	3.640	2.355	.095	.003
	*M X Gr	4,1715	3.314	2.144	.117	.002
	Error	1715	1.546	--	--	--
Science	Music Learner(M)	2,1715	1.268	1.170	.311	.001
	Gender(G)	1,1715	81.981	75.616	.001	.042
	Grades (Gr)	2,1715	5.350	4.935	.007	.006
	*M X Gr	4,1715	1.659	1.530	.191	.004
	Error	1715	1.084	--	--	--
Physical education	Music Learner(M)	2,1715	3.631	3.779	.023	.004
	Gender(G)	1,1715	33.511	34.881	.001	.020
	Grades (Gr)	2,1715	13.958	14.529	.000	.017
	*M X Gr	4,1715	1.242	1.293	.271	.003
	Error	1715	.961	--	--	--
Art	Music Learner(M)	2,1715	4.545	3.805	.022	.004
	Gender(G)	1,1715	27.749	23.231	.001	.013
	Grades (Gr)	2,1715	46.593	39.008	.000	.044
	*M X Gr	4,1715	2.775	2.324	.055	.005
	Error	1715	1.194	--	--	--

Note. * Only significant ($p < .05$) interaction effects reported

School subjects. As seen in Table 4.17, the main effect size indicated that 7% of the variance in task difficulty perception was explained by differences between school subjects,

$F(4.27,7330.45) = 127.74$, $p < .001$, $\eta_p^2 = .069$. This suggests that students' task difficulty perceptions differed across school subjects. Overall, all school subjects differed significantly from each other as follow (in rank order from the easiest to most difficult): physical education (M = 2.18), music (M = 2.65), art (M = 2.81), science (M = 2.82), mathematics (M = 2.89), and English (M = 2.94). Results also showed significant interactions between school subjects and music status, $F(8.55,7330.45) = 13.097$, $p < .001$, $\eta_p^2 = .015$, gender, $F(4.27,7330.45) = 32.216$, $p < .001$, $\eta_p^2 = .018$, and grade levels, $F(8.55,7330.45) = 12.936$, $p < .001$, $\eta_p^2 = .015$. The effect size for these interactions was equal or greater than .10 which approximated a small effect size. The three-way and four-way interactions between school subjects and the three independent variables were not significant.

Music student status. As seen in Table 4.17, the main effect size for music student status on perceived task difficulty was 2%, $F(2,1715) = 21.263$, $p < .001$, $\eta_p^2 = .024$. The interaction between school subjects and music student status on perceived task difficulty accounted for 2% of the variance, $F(8.55,7330.45) = 13.097$, $p < .001$, $\eta_p^2 = .015$, as seen in Table 4.17. Results of the follow-up three-way between-subjects ANOVA as shown in Table 4.18 produced a main effect of music student status on students' task difficulty perception in two of six subjects and explained by 1% and 10% of the variance. Post hoc analysis in Table 4.21 revealed that music students found music easier when compared to high aspiring (mean difference = -.27) and low aspiring (mean difference = -.84) students. High aspiring students, on the other hand, found music easier (mean difference = -.57) than low aspiring students. In mathematics, music students also found the subject easier than high aspiring students (mean difference = -.19). Even though significant main effects were found in PE ($p = .023$) and art ($p = .022$), their effect sizes were

smaller than .001. There was no significant difference in perceptions of task difficulty for English (p = .390) and science (p = .311) among the three types of music status.

Gender. Table 4.16 provides the rank order of task difficulty perception between males and females across the different school subjects. Both males and females considered physical education as their easiest subject. By gender, males perceived art and English as the two most difficult subjects, whereas females found science and math most difficult to learn. In addition, females also found music easier than males, ranking it as their second easiest subject.

As seen in Table 4.17, the main effect for gender on task difficulty perception was 1%, $F(1,1715) = 19.052$, $p < .001$, $\eta_p^2 = .01$, where males had lower task difficulty than females (mean difference = .08). There was an interaction between school subjects and gender on task difficulty perception, $F(4.27,7330.45) = 32.216$, $p < .001$ (Table 4.17). Results of the follow-up three-way between-subjects ANOVA as shown in Table 4.18 yielded a significant main effect of gender on participants' task difficulty perception in four of six subjects and explained by 1% to 4% of the variance. As seen in Table 4.22, males found science (mean difference = .46), mathematics (mean difference = .29), and physical education (mean difference = .27) significantly easier than females, whilst females found art (mean difference = .35) easier than males. There was no significant difference in perceived task difficulty for music (p = .091) and English (p = .295) between both genders.

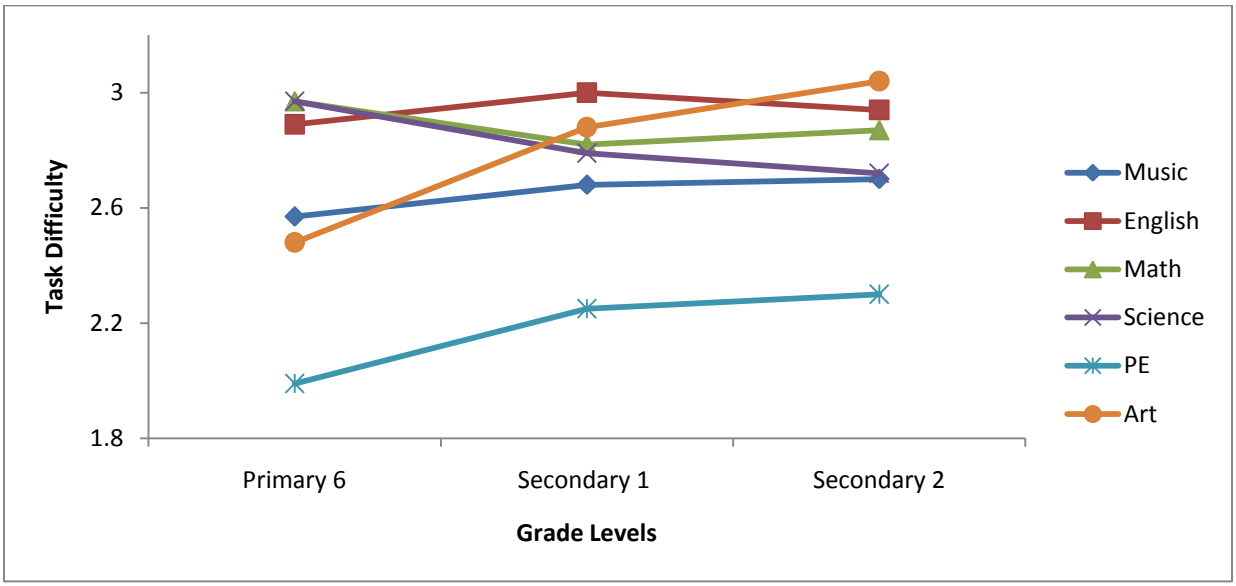
Grade levels. Figure 4.3 presents a graphic representation of participants' perceived task difficulty according to grade levels. A visual inspection shows an increase in difficulty level (*i.e., more difficult*) in music, physical education, and art, and a decrease in difficulty level (*i.e., easier*) in mathematics across the Primary 6 and Secondary 1 levels.

As seen in Table 4.17, the main effect size for grade level on task difficulty perception was 1%, $F(2.1715) = 16.786$, $p < .001$, $\eta_p^2 = .009$. In addition, 2% of the variance was explained by the interaction between school subject and grade levels, $F(8.55,7330.45) = 12.936$, $p < .001$, $\eta_p^2 = .015$, as seen in Table 4.17. Results of the follow-up three-way between-subjects ANOVA as shown in Table 4.18 yielded a significant main effect of grade levels on participants' task difficulty perception in four of six subjects and explained by 1% to 4% of the variance.

Post hoc as shown in Table 4.23 revealed that Secondary 1 participants had higher task difficulty than Primary 6 participants for art (mean difference = .41), and physical education (mean difference = .26) but had lower perceived task difficulty for science (mean difference = .18). When compared between the youngest Primary 6 participants, the Secondary 2 participants had higher task difficulty for art (mean difference = .56), physical education (mean difference = .31), and music (mean difference = .14) but lower task difficulty for science (mean difference = .25). There was no significant difference in task difficulty perceptions between Secondary 1 and Secondary 2 participants across all subjects except art where Secondary 2 students had higher task difficulty (mean difference = .15) than Secondary 1 participants. Task difficulty perceptions towards English and Mathematics were by far the most stable across Primary 6, Secondary 1, and Secondary 2 levels.

Figure 4.3

Changes in Perceived Task Difficulty in Each School Subject across Grade Levels



Interactions. As seen in Table 4.17, a further 1% of the variance was explained by the interaction between music status and grade levels on task difficulty perceptions, $F(4,1715) = 5.260$, $p = .046$, $\eta_p^2 = .006$. All other two-way, three-way, and four-way interactions were non-significant. Results of the three-way between-subjects ANOVA as shown in Table 4.18 revealed that 1% of variance was explained by the interaction between music status and grade levels on task difficulty perceptions for music, $F(4,1715) = 2.086$, $p = .049$, $\eta_p^2 = .006$.

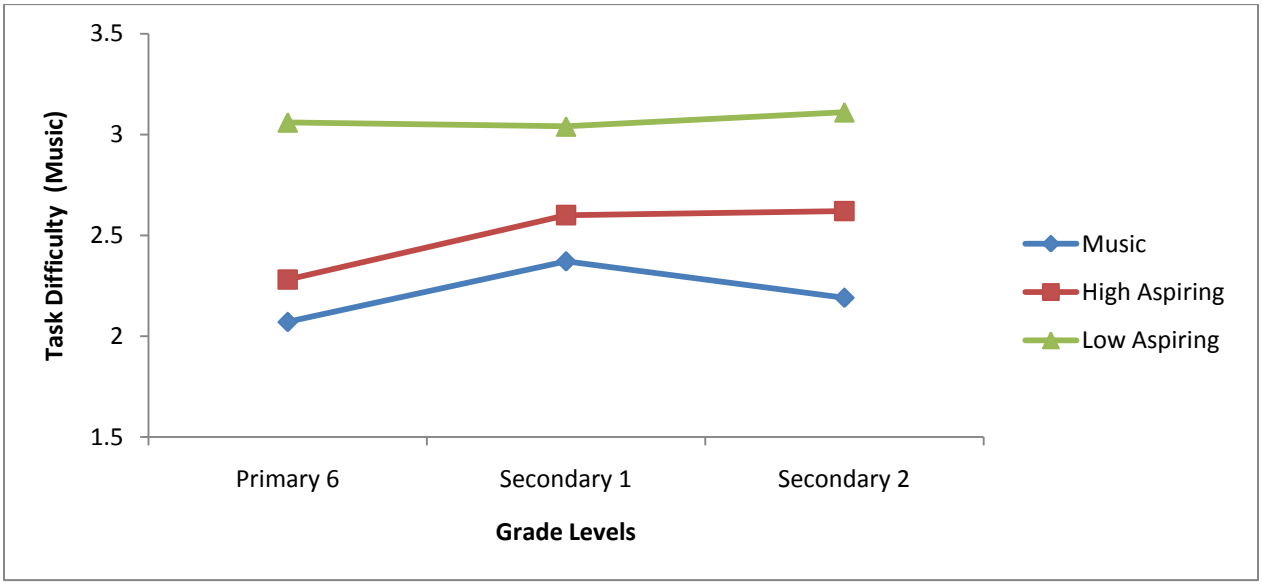
As seen in Figure 4.4, the perceived task difficulty for music among Primary 6 music students was significantly higher than Primary 6 low aspiring students (mean difference = .99). Primary 6 high aspiring students, on the other hand, found music significantly easier than Primary 6 low aspiring students (mean difference = .78). Among Secondary 1 students, music students' perceived task difficulty for music were lower than both high aspiring (mean difference = .23) and low aspiring (mean difference = .67) students. Secondary 1 high aspiring students also found music easier than Secondary 1 low aspiring students (mean difference = .44). This similar pattern also emerged for Secondary 2 music students as they had significantly lower perceived

task difficulty than their high aspiring (mean difference = .43) and low aspiring (mean difference = .92) counterparts. In addition, Secondary 2 high aspiring students also found music easier than Secondary 2 low aspiring students (mean difference = .49).

Across the primary-secondary transition, Secondary 1 high aspiring students had higher task difficulty perceptions than Primary 6 high aspiring students (mean difference = .32). There was, however, no difference in the perceptions of task difficulty between Secondary 1 and Secondary 2 high aspiring students (p = .987). Similar pattern was found for music students where the Secondary 1 students had higher task difficulty perceptions than Primary 6 students (mean difference = .30), but no difference was found between Secondary 1 and Secondary 2 music students (p = .169). On the other hand, there was no difference in perceived task difficulty among low aspiring students across Primary 6, Secondary 1, and Secondary 2 levels.

Figure 4.4

Interaction between Music Student Status and Grade Levels on Participants' Perceived Task Difficulty for Music



Students' Task Values in Different School Subjects

Effects from the 2 (gender) X 3 (grade levels) X 3 (music status) X 6 (school subject) mixed four-way ANOVA are presented in Table 4.19. Because the assumption of sphericity was violated (Mauchly W = .559, χ^2 (14) = 997.867, $p < .001$), the main effect of school subject and its interaction with gender, grades, and music student status were assessed with *F* value adjusted using the Greenhouse-Geisser (1959) epsilon which provides a F-test using a much more stringent criterion.

Table 4.19

Four-way Mixed ANOVA of Participants' Task Value Perceptions across School Subjects by Music Student Status, Gender, and Grade Levels

Variable	df	Mean Square	F	Sig.	Effect Size
		Between-subjects effects			
Music Status (M)	2, 1715	145.156	87.291	.001	.092
Gender (G)	1, 1715	37.130	22.328	.001	.013
Grades (Gr)	2, 1715	55.881	33.604	.001	.038
G X M	2, 1715	1.782	1.072	.343	.001
Gr X M	4, 1715	2.260	1.359	.246	.003
G X Gr	2, 1715	10.696	6.432	.002	.007
G X Gr X M	4, 1715	1.798	1.081	.364	.003
Error (between)	1715	1.663	--	--	--
		Within-subjects effects			
School Subject (S)	3.98,4084.56	405.751	677.608	.001	.283
S X M	7.96,4084.56	16.970	28.341	.001	.032
S X G	3.98,4084.56	26.426	44.131	.001	.025
S X Gr	7.96,4084.56	5.493	9.173	.001	.011
S X G X M	7.96,4084.56	1.099	1.835	.066	.002
S X Gr X M	15.91,4084.56	.752	1.256	.217	.003
S X G X Gr	7.96,4084.56	1.079	1.801	.072	.002
S X G X Gr X M	15.91,4084.56	.598	.999	.454	.002
Error (within)	4084.56	.599	--	--	--

As seen in Table 4.20, a univariate three-way between-subjects ANOVA was used as a follow-up test to investigate significant effects for individual school subject resulted from the

mixed four-way ANOVA. All assumptions of normality and homogeneity of variance were examined and found satisfied only for art. A further analysis found that the ratio between the largest and the smallest variance for these music, English, mathematics, science and physical education did not violate the predetermined value of 3.0. This suggests that the ANOVA results could be interpreted for these subjects despite the violation of homogeneity.

Table 4.20

Three-way ANOVA of Participants' Task Values for each School Subjects by Music Student Status, Gender, and Grade Levels

School Subject	Variable	df	Mean Square	F	Sig.	Effect Size η_p^2
Music	Music Status (M)	2,1715	136.768	174.334	.001	.169
	Gender(G)	1,1715	.177	.226	.635	.000
	Grades (Gr)	2,1715	14.974	19.087	.001	.022
	*GX Gr	2,1715	7.287	9.288	.001	.011
	Error	1715	.785	--	--	--
English	Music Status (M)	2,1715	9.272	23.347	.001	.027
	Gender(G)	1,1715	.399	1.004	.317	.001
	Grades (Gr)	2,1715	6.147	15.478	.001	.018
	*GX Gr	2,1715	.317	.799	.450	.001
	Error	1715	.397	--	--	--
Math	Music Status (M)	2,1715	10.760	17.962	.001	.021
	Gender(G)	1,1715	4.875	8.138	.004	.005
	Grades (Gr)	2,1715	5.066	8.457	.001	.010
	*GX Gr	2,1715	1.612	2.690	.068	.003
	Error	1715	.599	--	--	--
Science	Music Status (M)	2,1715	8.818	16.769	.001	.019
	Gender(G)	1,1715	20.611	39.196	.001	.022
	Grades (Gr)	2,1715	1.612	3.066	.047	.004
	*GX Gr	2,1715	.430	.818	.441	.001
	Error	1715	.526	--	--	--

Table 4.20 (Cont.)

School Subject	Variable	df	Mean Square	F	Sig.	Effect Size η_p^2
Physical education	Music Status (M)	2,1715	16.505	23.071	.001	.026
	Gender(G)	1,1715	106.095	148.308	.001	.080
	Grades (Gr)	2,1715	28.568	39.934	.001	.044
	*GX Gr	2,1715	1.547	2.162	.115	.003
	Error	1715	.715	--	--	--
Art	Music Status (M)	2,1715	30.532	29.855	.001	.034
	Gender(G)	1,1715	10.078	9.855	.002	.006
	Grades (Gr)	2,1715	21.361	20.888	.001	.024
	*GX Gr	2,1715	3.793	3.709	.025	.004
	Error	1715	1.023	--	--	--

Note. * Only significant ($p < .05$) interaction effects reported

School subjects. As seen in Table 4.19, the main effect size indicated that 28% of the variance in task values was explained by differences between school subjects, $F(3.98,4084.56) = 677.608$, $p < .001$, $\eta_p^2 = .283$. This suggests that participants' overall task values differed across school subjects. There were significant interactions between school subjects and music status, $F(7.96,4084.56) = 28.341$, $p < .001$, $\eta_p^2 = .032$, gender, $F(3.98,4084.56) = 44.131$, $p < .001$, $\eta_p^2 = .025$, and grade levels, $F(7.96,4084.56) = 9.173$, $p < .001$, $\eta_p^2 = .011$. The effect size for these interactions was equal or greater than .10, which approximates a small effect size. The three-way and four-way interactions between school subjects and the three independent variables were not significant.

Music student status. As seen in Table 4.19, **t**he main effect size for music student status on task values was 9%, $F(2,1715) = 87.291$, $p < .001$, $\eta_p^2 = .092$. The interaction between school subjects and music student status on task values accounted for 3% of the variance, $F(7.96,4084.56) = 28.341$, $p < .001$, $\eta_p^2 = .032$ as seen in Table 4.19. Results of the follow-up three-way between-subjects ANOVA as shown in Table 4.20 produced a main effect of music

student status on participants' task values in all school subjects and explained by 2% to 17% of the variance.

Post hoc analysis in Table 4.21 revealed music students valued more than low aspiring students in four school subjects: music (mean difference = 1.00), art (mean difference = .38), English (mean difference = .19), and mathematics (mean difference = .19). Music students also had significantly higher task value than high aspiring students for music (mean difference = .23) but lower task value for physical education (mean difference = .32). When compared to low aspiring students, high aspiring students had significantly greater task value for all school subjects: music (mean difference = .77), art (mean difference = .50), English (mean difference = .23), mathematics (mean difference = .22), physical education (mean difference = .22), and science (mean difference = .18).

Gender. As seen in shown in Table 4.16, both males and females ranked music and art as their second least valued subjects. By gender, males considered science and mathematics as their most valued subjects, whereas females ranked English and mathematics as their two most valued subjects. As seen in Table 4.19, the main effect for gender on task values was 1%, $F(1,1999) = 20.98$, $p < .001$, $\eta_p^2 = .01$. There was also an interaction between school subject and gender on task values, $F(7.96,4084.56) = 9.173$, $p < .001$, $\eta_p^2 = .011$. Results of the follow-up three-way between-subjects ANOVA as shown in Table 4.20 yielded a significant main effect of gender on students' task values in four of six subjects and explained by 1% to 8% of the variance. As seen in Table 4.22, males had significantly higher value than females for physical education (mean difference = .48), science (mean difference = .18), and mathematics (mean difference = .05), whilst females valued art (mean difference = .28) more than their males. There was no

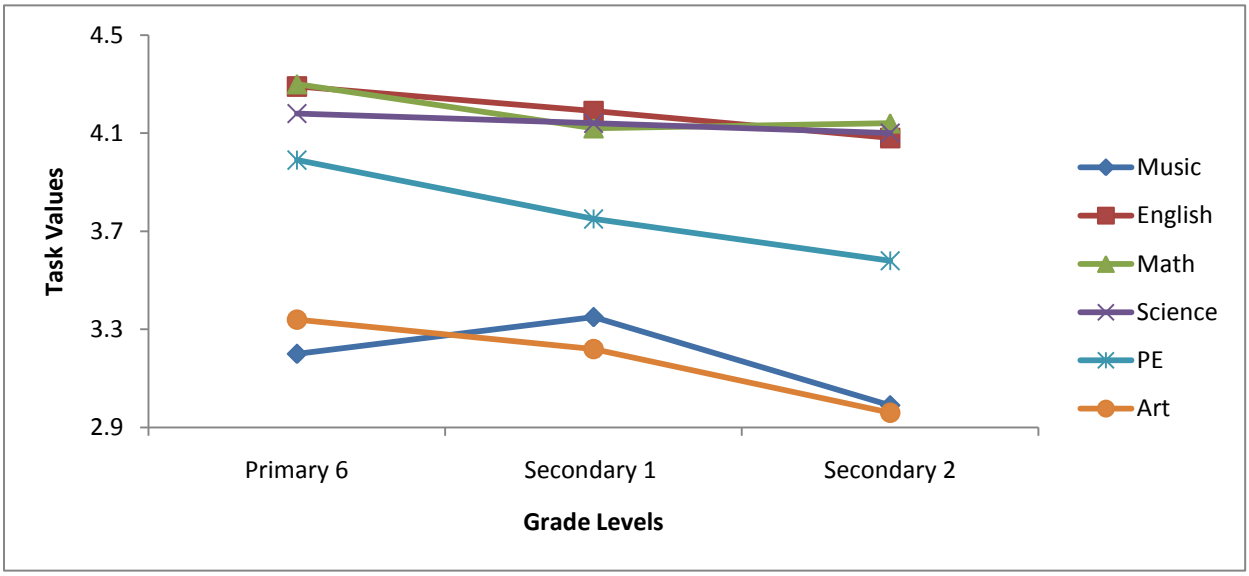
significant difference in perceived value for music (p = .635) and English (p = .317) between both genders.

Grade levels. Figure 4.5 presents a graphic representation of participants' task values according to grade levels. A visual inspection shows a decline in task values for English, mathematics, physical education, and art across the Primary 6 and Secondary 1 levels. As seen in Table 4.19, the main effect size for grade levels on task values was 4%, $F(2,1715) = 33.604$, $p < .001$, $\eta_p^2 = .038$. A further 1% of the variance was also explained by the interaction between school subject and grade levels, $F(7.96,4084.56) = 9.173$, $p < .001$, $\eta_p^2 = .011$ (Table 4.19). Results of the follow-up three-way between-subjects ANOVA as shown in Table 4.20 yielded a significant main effect of grade levels on participants' perceived task values in five of six subjects and explained by 1% to 4% of the variance.

Post hoc as shown in Table 4.23 revealed that Secondary 1 students' had lower value for physical education (mean difference = .24), mathematics (mean difference = .18), and English (mean difference = .10), but valued music more (mean difference = .15) than Primary 6 participants. When compared to Primary 6 students, Secondary 2 students' held lower valuing for music (mean difference = .22), English (mean difference = .21), mathematics (mean difference = .16), physical education (mean difference = .41), and art (mean difference = .38). Furthermore, Secondary 2 students also held lower value perception than Secondary 1 students for music (mean difference = .37), English (mean difference = .11), physical education (mean difference = .17), and art (mean difference = .26). Students' perceived valuing for science (p = .047 but $\eta_p^2 < .01$) was by far the most stable across the three grade levels.

Figure 4.5

Changes in Task Values in Each School Subject across Grade Levels



Interactions. As seen in Table 4.19, a further 1% of the variance was explained by the interaction between gender and grade levels in task values, $F(2,1715) = 6.432$, $p = .002$, $\eta_p^2 = .007$. All other two-way, three-way, and four-way interactions were non-significant. Results of the three-way between-subjects ANOVA as shown in Table 4.20 revealed that 1% of variance was explained by the interaction between gender and grade levels on task values for music, $F(2,1715) = 9.288$, $p < .001$, $\eta_p^2 = .011$. Figure 4.6 shows that females' valuing for music at the Primary 6 level was similar to their Secondary 1 counterparts. The older Secondary 2 females, however, have lower task values for music than their younger counterparts (mean difference = .37). On the other hand, Primary 6 males' valuing for music was lower than their Secondary 1 counterparts (mean difference = .37). Like females, Secondary 1 males' valuing for music was higher than Secondary 2 males (mean difference - .35). Overall, females had higher task values than males for music at Primary 6 level (mean difference = .54), but the gender gap became insignificant at Secondary 1 ($p = .164$) and Secondary 2 ($p = .248$) levels.

Figure 4.6

Interaction between Gender and Grade Levels on Participants' Valuing of Music

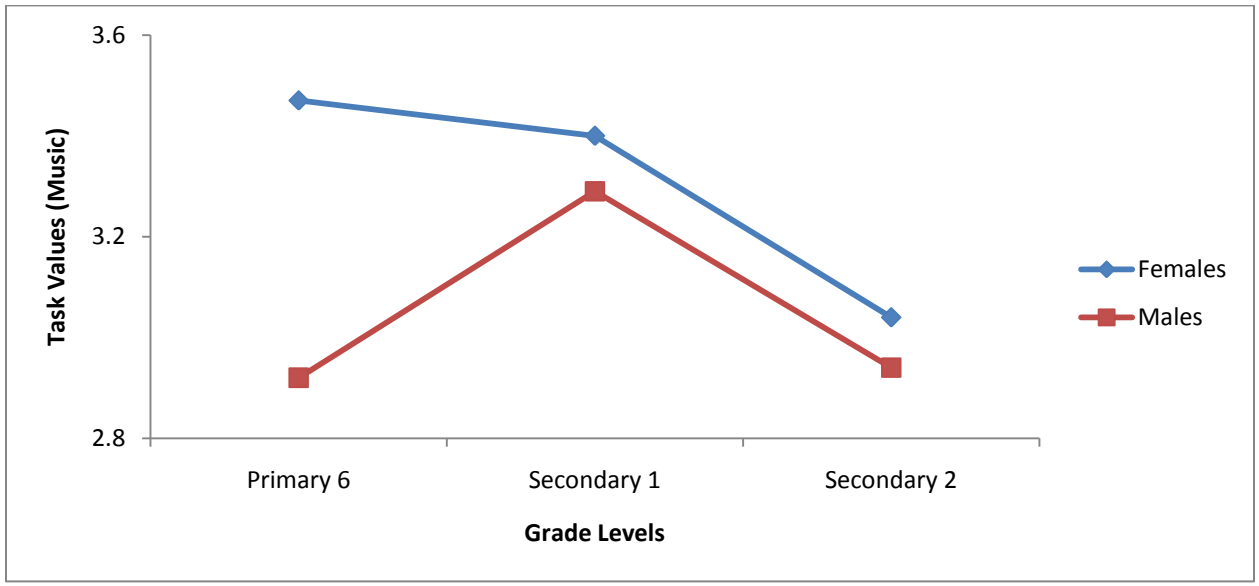


Table 4.21

Summary of Participants' Motivation to Learning Music and Other School Subjects by Music Student Status

School Subject	Motivation Variables	Music (M) n	Music (M) M (SD)	High Aspiring (H) n	High Aspiring (H) M (SD)	Low Aspiring (L) n	Low Aspiring (L) M (SD)	df	F	*p*	Effect Size	Post-Hoc
Music	Competence	475	3.66 (.88)	577	3.37 (.86)	681	2.62 (.83)	2, 1715	192.62	.001	.183	M>L M>H H>L
	Task Difficulty	475	2.23 (.93)	577	2.50 (.95)	681	3.07 (.94)	2, 1715	98.37	.001	.103	M<H M<L A<L
	Task Values	475	3.65 (.94)	577	3.42 (.91)	681	2.65 (.88)	2, 1715	174.33	.001	.169	M>H M>L A>L
English	Competence	475	3.48 (.83)	577	3.58 (.85)	681	3.31 (.85)	2, 1715	18.72	.001	.021	M>L A>L
	Task Difficulty	475	2.91 (1.09)	577	2.96 (1.07)	681	2.96 (1.02)	2, 1715	.94	.390	.001	-
	Task Values	475	4.26 (.56)	577	4.29 (.58)	681	4.06 (.71)	2, 1715	23.35	.001	.027	M>L A>L

Table 4.21 (Cont.)

School Subject	Motivation Variables	Music (M) n	Music (M) M (SD)	High Aspiring (H) n	High Aspiring (H) M (SD)	Low Aspiring (L) n	Low Aspiring (L) M (SD)	df	F	*p*	Effect Size	Post-Hoc
Math	Competence	475	3.68 (.99)	577	3.63 (1.01)	681	3.41 (1.01)	2, 1715	16.92	.001	.019	M>L H>L
	Task Difficulty	475	2.76 (1.25)	577	2.95 (1.32)	681	2.92 (1.21)	2, 1715	6.71	.001	.008	M<H
	Task Values	475	4.25 (.73)	577	4.28 (.73)	681	4.06 (.85)	2, 1715	17.96	.001	.021	H>L M>L
Science	Competence	475	3.52 (.89)	577	3.61 (.89)	681	3.46 (.86)	2, 1715	11.23	.001	.013	H>L
	Task Difficulty	475	2.86 (1.08)	577	2.84 (1.12)	681	2.78 (1.02)	2, 1715	1.17	.311	.001	--
	Task Values	475	4.15 (.74)	577	4.24 (.71)	681	4.05 (.75)	2, 1715	16.77	.001	.019	H>L
PE	Competence	475	3.50 (.94)	577	3.78 (.91)	681	3.53 (.96)	2, 1715	19.54	.001	.022	M<A H>L
	Task Difficulty	475	2.31 (1.02)	577	2.09 (1.01)	681	2.17 (.98)	2, 1715	3.78	.023	.004	M>H
	Task Values	475	3.63 (.91)	577	3.95 (.86)	681	3.72 (.93)	2, 1715	23.07	.001	.026	M<H H>L
Art	Competence	475	3.27 (1.03)	577	3.31 (1.02)	681	2.84 (.98)	2, 1715	29.34	.001	.033	M>L H>L
	Task Difficulty	475	2.74 (1.13)	577	2.70 (1.17)	681	2.95 (1.09)	2, 1715	3.81	.022	.004	M<L H<L
	Task Values	475	3.28 (1.05)	577	3.40 (1.03)	681	2.90 (1.02)	2, 1715	29.86	.001	.034	M>L H>L

Table 4.22

Summary of Participants' Motivation to Learning Music and Other School Subjects by Gender

School Subject	Motivation Variables	Females (F) n	Females (F) M (SD)	Males (M) n	Males (M) M (SD)	df	F	*p*	Effect Size	Post-Hoc
Music	Competence	859	3.31 (.91)	874	3.01 (.99)	1,1715	.38	.536	.000	-
	Task Difficulty	859	2.49 (.93)	874	2.81 (1.05)	1,1715	2.89	.09	.002	-
	Task Values	859	3.31 (.95)	874	3.04 (1.03)	1,1715	.23	.635	.000	
English	Competence	859	3.44 (.86)	874	3.45 (.85)	1,1715	2.78	.096	.002	-
	Task Difficulty	859	2.97 (1.08)	874	2.93 (1.06)	1,1715	1.10	.295	.001	-
	Task Values	859	4.20 (.61)	874	4.17 (.68)	1,1715	1.00	.317	.001	-

Table 4.22 (Cont.)

School Subject	Motivation Variables	Females (F) n	Females (F) M (SD)	Males (M) n	Males (M) M (SD)	df	F	*p*	Effect Size	Post-Hoc
Math	Competence	859	3.48 (1.03)	874	3.63 (.99)	1,1715	21.77	.001	.013	F<M
	Task Difficulty	859	3.03 (1.23)	874	2.74 (1.27)	1,1715	28.27	.001	.016	F>M
	Task Values	859	4.16 (.77)	874	4.21 (.80)	1,1715	8.14	.004	.005	F<M
Science	Competence	859	3.36 (.87)	874	3.69 (.86)	1,1715	70.43	.001	.039	F<M
	Task Difficulty	859	3.05 (1.04)	874	2.59 (1.05)	1,1715	75.62	.001	.042	F>M
	Task Values	859	4.05 (.73)	874	4.23 (.73)	1,1715	39.20	.001	.022	F<M
PE	Competence	859	3.42 (.92)	874	3.79 (.93)	1,1715	84.85	.001	.047	F<M
	Task Difficulty	859	2.32 (.98)	874	2.05 (1.01)	1,1715	34.88	.001	.020	F>M
	Task Values	859	3.53 (.90)	874	4.01 (.85)	1,1715	148.31	.001	.080	F<M
Art	Competence	859	3.27 (1.00)	874	2.96 (1.04)	1,1715	15.20	.001	.009	F>M
	Task Difficulty	859	2.63 (1.08)	874	2.98 (1.17)	1,1715	23.23	.001	.013	F<M
	Task Values	859	3.31 (1.02)	874	3.03 (1.07)	1,1715	9.86	.002	.006	F>M

Table 4.23

Summary of Participants' Motivation to Learning Music and Other School Subjects by Grade Levels

School Subject	Motivation Variables	Grade 6 N	Grade 6 M (SD)	Grade 7 n	Grade 7 M (SD)	Grade 8 n	Grade 8 M (SD)	df	F	*p*	Effect Size	Post-Hoc
Music	Competence	553	3.13 (.99)	579	3.22 (.95)	601	3.12 (.95)	2, 1715	.11	.900	.000	-
	Task Difficulty	553	2.57 (1.03)	579	2.68 (.96)	601	2.70 (1.02)	2, 1715	5.76	.003	.007	6<7 6<8
	Task Values	553	3.20 (1.01)	579	3.35 (.97)	601	2.99 (.99)	2, 1715	19.09	.001	.022	6<7 6>8 7>8
English	Competence	553	3.52 (.86)	579	3.39 (.86)	601	3.43 (.83)	2, 1715	3.86	5.448	.004	6>7
	Task Difficulty	553	2.89 (1.12)	579	3.00 (1.06)	601	2.94 (1.03)	2, 1715	1.95	.143	.002	-
	Task Values	553	4.29 (.56)	579	4.19 (.63)	601	4.08 (.64)	2, 1715	15.48	.001	.018	6>7 6>8 7>8

Table 4.23 (Cont.)

School Subject	Motivation Variables	Grade 6 N	Grade 6 M (SD)	Grade 7 n	Grade 7 M (SD)	Grade 8 n	Grade 8 M (SD)	df	F	*p*	Effect Size	Post-Hoc
Math	Competence	553	3.56 (.99)	579	3.55 (1.03)	601	3.56 (1.02)	2, 1715	.16	.850	.000	-
	Task Difficulty	553	2.97 (1.33)	579	2.82 (1.22)	601	2.87 (1.23)	2, 1715	2.36	.095	.003	-
	Task Values	553	4.30 (.70)	579	4.12 (.82)	601	4.14 (.82)	2, 1715	8.46	.001	.010	6>7 6>8
Science	Competence	553	3.43 (.87)	579	3.54 (.88)	601	3.59 (.89)	2, 1715	2.15	.117	.002	-
	Task Difficulty	553	2.97 (1.10)	579	2.79 (1.07)	601	2.72 (1.03)	2, 1715	4.94	.007	.006	6>7 6>8
	Task Values	553	4.18 (.69)	579	4.14 (.72)	601	4.10 (.80)	2, 1715	3.07	.047	.004	-
PE	Competence	553	3.72 (.93)	579	3.56 (.95)	601	3.53 (.95)	2, 1715	10.26	.001	.012	6>8
	Task Difficulty	553	1.99 (.92)	579	2.25 (1.03)	601	2.30 (1.03)	2, 1715	14.53	.001	.017	6<7 6<8
	Task Values	553	3.99 (.82)	579	3.75 (.87)	601	3.58 (.96)	2, 1715	39.93	.001	.044	6>7 6>8 7>8
Art	Competence	553	3.22 (1.04)	579	3.12 (1.02)	601	3.02 (1.03)	2, 1715	8.19	.001	.009	6>8
	Task Difficulty	553	2.47 (1.08)	579	2.88 (1.10)	601	3.04 (1.15)	2, 1715	39.01	.001	.044	6<7 6<8
	Task Values	553	3.34 (1.03)	579	3.22 (1.04)	601	2.96 (1.05)	2, 1715	20.89	.001	.024	6>8 7>8

Regression Analysis

Regression analysis was conducted to investigate how well competence beliefs and task values predicted students' intentions to pursue instrumental music instruction outside school (dependent variables) (Research Question 3). Another purpose was to determine concurrent validity of the web-based survey items as discussed in Chapter Three.

Correlations between Competence Beliefs, Task Difficulty, and Task Values

Pearson correlation analysis was first used to determine correlations on the cumulative means of each of three motivation constructs (competence beliefs, perceptions of task difficulty, and task values) in each school subject as shown in Table 4.24. Consistent with earlier studies (e.g., Eccles et al., 1983, Eccles & Wigfield, 1995, etc.), the results supported the theoretical

framework whereby competence beliefs were strongly positively correlated to task value constructs within each school subject. As expected, perceptions of task difficulty were found negatively correlated to competence beliefs (Eccles & Wigfield, 1995). A further analysis also found moderate negative correlations between perceptions of task difficulty and task values within each school subject, suggesting a lack of relationship between both of these constructs.

Table 4.24

Correlations between Competence, Task Difficulty, and Task Values by School Subjects

Correlations	Com MU	Easy MU	Val MU	Com EN	Easy EN	Val EN	Com MA	Easy MA	Val MA	Com SC	Easy SC	Val SC	Com PE	Easy PE	Val PE	Com AR	Easy AR	Val AR
Com MU	1																	
Easy MU	-.67**	1																
Val MU	.78**	-.50**	1															
Com EN	.32**	-.18**	.20**	1														
Easy EN	-.12**	.22**	-.06**	-.67**	1													
Val EN	.21**	-.12**	.26**	.55**	-.34**	1												
Com MA	.22**	-.01	.13**	.12**	.12**	.15**	1											
Easy MA	-.06*	.03	-.04	.06*	.09**	-.00	-.74**	1										
Val MA	.19**	-.04	.21**	.07**	.12**	.42**	.72**	-.51**	1									
Com SC	.22**	-.04	.12**	.35**	-.12**	.25**	.47**	-.26**	.34**	1								
Easy SC	-.05**	.09**	-.01	-.16**	.35**	-.11**	-.22**	.41**	-.13**	-.69**	1							
Val SC	.18**	-.05*	.23**	.20**	-.02	.48**	.33**	-.16**	.56**	.68**	-.46**	1						
Com PE	.30**	-.13**	.20**	.27**	-.05*	.18**	.24**	-.09**	.23**	.32**	-.14**	.24**	1					
Easy PE	-.12**	.27**	-.05*	-.12**	.18**	-.12**	-.07**	.14**	-.11**	-.11**	.20**	-.11**	-.69**	1				
Val PE	.20**	-.04	.31**	.17**	-.02	.25**	.19**	-.08**	.30**	.25**	-.12**	.34**	.74**	-.49**	1			
Com AR	.52**	-.25**	.40**	.33**	-.07**	.22**	.17**	.01	.15**	.21**	-.02	.16**	.29**	-.10**	.18**	1		
Easy AR	-.29**	.38**	-.22**	-.18**	.20**	-.12**	.04*	-.02	.00	.01	.04	-.02	-.11**	.22**	-.05*	-.71**	1	
Val AR	.44**	-.21**	.53**	.22**	-.05*	.29**	.07**	.04	.18**	.12**	.00	.22**	.20**	-.05*	.27**	.81**	-.61**	1

Note: Com = competence; Easy = task difficulty; Val = task values; MU = music; EN = English; MA = math; SC = science; PE = physical education; AR = art; $^{*}p < .05$, $^{**}p < .01$

Predictors for Enrollment in Courses Outside School

After examining correlations between the three motivational constructs, a linear multiple regression analysis was subsequently conducted to determine the hypothesis that students' choice of achievement tasks in each school subject was most directly predicted by their competence beliefs on this subject and the values they attached to it (Eccles et al., 1983). Specifically, the predictors were the cumulative means for competence beliefs, perceptions of task difficulty, and task values, whilst the dependent variable was the mean ratings based on Q 31. An informal examination of the data with histograms and scatterplots was initially conducted for each school subject and there were no serious threats to underlying distributional assumptions of residuals of the dependent variable.

Table 4.25 presents a summary of the multiple regression analysis for each school subject. The overall F-tests for all subjects were significant at an alpha level of .05 as follow: music - $F(3, 1729) = 245.32$, $MS_{residual} = 1.44$, $p < .001$; English - $F(3, 1729) = 235.44$, $MS_{residual} = .99$, $p < .001$; mathematics - $F(3, 1729) = 388.65$, $MS_{residual} = .93$, $p < .001$; science - $F(3, 1729) = 328.01$ $MS_{residual} = .92$, $p < .001$; physical education - $F(3, 1729) = 295.34$, $MS_{residual} = .93$, $p < .001$; and art - $F(3, 1729) = 517.88$, $MS_{residual} = 1.14$, $p < .001$. Additionally, the squared multiple correlation coefficients (R^2) across subjects ranged from .29 to .47, suggesting the range of percentages of variance in participants' interest in receiving instruction in a particular subject outside school (Q31) could be accounted for by the linear combination of competence beliefs and task values. Task difficulty of the subject was found not a predictor to participants' intention to enroll in instruction outside school.

Table 4.25

Regression Analysis Summary for Participants' Intention to Enroll in Instruction of Different School Subjects Outside School (Q31: If you were to be given an opportunity to learn outside school, how much might you want to learn a subject)

	F	R^2	Semi-Partial Correlation	Unstandardized Coefficients		Standardized Coefficients
Predictors				*B*	Standard Error	B
Music	245.320**	.299	--	1.09**	.21**	
Competence			.13**	.37**	.06**	.25**
Task Difficulty			-.03	-.05	.04	-.04
Task Values			.19**	.44**	.05**	.31**
English	235.44**	.290	--	-.93**	.23**	
Competence			.11**	.24**	.04**	.17**
Task Difficulty			.07**	.11**	.03**	.10**
Task Values			.39**	.85**	.05**	.47**
Math	388.65**	.403	--	-.50**	.21**	
Competence			.06**	.14**	.04**	.12**
Task Difficulty			.02	.03	.03	.04
Task Values			.40**	.90**	.04**	.56**
Science	328.01**	.363	--	-.24	.21	
Competence			.10**	.23**	.04**	.17**
Task Difficulty			.01	.01	.03	-.01
Task Values			.35**	.77**	.04**	.47**
PE	295.34**	.339	--	1.65**	.18**	
Competence			.11**	.26**	.04**	.21**
Task Difficulty			-.07**	-.12**	.03**	-.10**
Task Values			.23**	.45**	.04**	.35**
Art	517.88**	.473	--	-.21	.19	
Competence			.10**	.28**	.05**	.19**
Task Difficulty			-.01	-.01	.03	-.01
Task Values			.30**	.72**	.04**	.51**

$^{*}p < .05$, $^{**}p < .01$

Based on examinations of the semi-partial correlations and the slopes of the unstandardized beta coefficients, it could be concluded that the overall strongest predictor of students' intention to enroll in instruction of a particular school subject outside school was the task values attached to the subject. This was in alignment to the expectancy-value theoretical

framework, providing empirical evidence that task values predicted choice behavior (e.g., Eccles et al., 1983; Eccles & Wigfield, 1995).

Predictors for Enrollment in Instrumental Music Instruction Outside School

The previous section provided empirical evidence that students' intention to enroll in instrumental music instruction outside of school (Q31) was predicted by both competence beliefs and task values for a particular school subject. This section further determines specific motivational factors (i.e., competence beliefs, perceptions of interest, importance, and usefulness) that predict music and non-music students' enrolment intention for instrumental music instruction outside school (Research Question 3). An informal examination of the data with histograms and scatterplots was conducted in each analysis and no serious threats to underlying distributional assumptions of the residuals of the dependent variable was found for both music and non-music students.

Music students. A summary of the regression analysis is shown in Table 4.26. The value of R^2 was .199, $F(4, 470) = 29.269$, $MS_{residual} = .970$, $p < .001$, indicating that 19.9% of the variance in music students' interest in receiving instrumental music instruction outside of school could be accounted for by the linear combination of the these four expectancy-value constructs. The standard error of the estimate was .985. Although each independent variable alone correlated significantly with the dependent variable, only usefulness (2.13%) and interest (0.96%) constructs accounted for a significant amount of unique variance when holding the other predictors constant. This suggests that music students' perceived utility value and competence beliefs of music in school predicted their intentions to enroll in instrumental music instruction outside of school.

Table 4.26

Regression Analysis Summary for Music Students' Intention to Enroll in Instrumental Music Instruction Outside School (Q31: If you were to be given an opportunity to learn outside school, how much might you want to learn musical instrument)

Variable	Zero-Order *r*					Semi-Partial *r*	*B* (SE)	β
	Comp	Interest	Importance	Usefulness	Further learning (DV)			
Competence	1	.656**	.562**	.632**	.370**	.098	.175 (.073)	.140*
Interest		1	.689**	.643*	.354**	.040	.066 (.068)	.062
Importance			1	.755**	.369**	.039	.068 (.072)	.065
Usefulness				1	.420**	.146	.251 (.071)	.242**
Constant							2.225 (.205)	
Mean	3.66	3.72	3.65	3.57	4.25			
SD	.88	1.03	1.05	1.06	1.09			R^2 = .199**

Note. β = standardized coefficients; *B* (SE) = unstandardized coefficients (standard error)
** $p < .01$, * $p < .05$,

Non-music students. As seen in Table 4.27, the value of R^2 was .270, F (4, 1253) = 115.891, $MS_{residual}$ = .1.515, $p < .001$, indicating that 27.0% of the variance in participants' interest in instrumental music instruction outside of school could be accounted for by the linear combination of the these four expectancy-value constructs. The standard error of the estimate was 1.23. Competence beliefs, perceived interest, and perceived usefulness motivational factors accounted for a significant amount of unique variance (from 1.41% to 2.31%) of the dependent variable when holding the predictors constant. This suggests that competence beliefs, intrinsic value, and utility value predicted non-music students' intentions to take up instrumental music instruction outside of school.

Table 4.27

Regression Analysis Summary for Non-Music Students' Intention to Enroll in Instrumental Music Instruction Outside School (Q31: If you were to be given an opportunity to learn outside school, how much might you want to learn musical instrument)

Variable	Zero-Order *r*					Semi-Partial *r*	*B* (SE)	β
	Comp	Interest	Importance	Usefulness	Further learning (DV)			
Competence	1	.692**	.692**	.703**	.481**	.152	.387 (.061)	.248**
Interest		1	.692**	.605**	.440**	.119	.236 (.048)	.181**
Importance			1	.715**	.391**	-.030	-.065 (.052)	-.050
Usefulness				1	.450**	.128	.264 (.050)	.202**
Constant							.761 (.121)	
Mean	2.97	3.03	3.02	2.95	3.21			
SD	.92	.1.10	1.09	1.10	1.43		R^2 = .270**	

Note. β = standardized coefficients; *B* (SE) = unstandardized coefficients (standard error)
** $p < .01$

Summary

Results from both descriptive and inferential statistical analysis presented in this chapter provided insights and understanding into the responses from participants' motivation towards learning music as compared to other school subjects according to music student status and gender across Primary 6, Secondary 1, and Secondary 2 levels.

The descriptive statistics demonstrated that music students typically were female ethnic Chinese students from the Express education stream. Additionally, music students' immediate family members also tended to possess current or previous instrumental musical experiences and they were also likely to own a piano and/or guitar at home than non-music students. Most music CCA students played in the school band or sang in the choir and 49.3% of all private music

instruction students learned piano outside of school. Non-music students, on the other hand, typically were male adolescents of the racial minorities from the less academically inclined Normal Academic and Normal Technical streams. Even though they were not currently learning any musical instruments, approximately a third of those who had at least one musical instrument at home were owned by high aspiring students (34.1%) and low aspiring students (29.2%).

ANOVA was used to examine differences in competence beliefs, perceived task difficulty, and task values towards learning music as compared to other school subjects as a function of music student status and gender across Primary 6, Secondary 1, and Secondary 2 levels. Music students more generally possessed higher competence beliefs and greater valuing in a majority of school subjects than low aspiring non-music students. By gender, males demonstrated higher competence beliefs and greater valuing than females for a majority of subjects. Finally, Secondary 2 students' valuing of non-core subjects was lower than their Primary 6 counterparts. On the other hand, there was no difference in students' motivation towards studying the core subjects between Secondary 1 and Secondary 2 levels.

The multiple regression analysis confirmed the concurrent validity of the test instrument in this study where students' intention to enroll in instruction outside school in a particular subject (Q31) was most directly predicted by their competence beliefs on the subject and the values they attached to it (Eccles et al., 1983; Eccles & Wigfield, 1995). It was also found that different predictors, comprising competence beliefs, intrinsic value, and utility value predicted music and non-music students' intentions to enroll in instrumental music instruction outside of school. The perceived importance of the subject was not a factor. The following chapter provides an overview of the study, summarizes and discusses significant findings in the light of existing research studies, and suggests implications and recommendations for further research.

CHAPTER 5: DISCUSSION AND CONCLUSIONS

Introduction

The purpose of this study was to examine the expectancies and task values held by Singaporean adolescents about learning music and other school subjects (English, mathematics, science, physical education, and art) across Primary 6, Secondary 1, and Secondary 2 levels (Grades 6 to 8). By examining competence beliefs and task values that students attached to specific school subjects, the current study provided insight into the current state of music education among a sample of adolescents with the aim of understanding and providing suggestions that might foster music instruction that is offered in Singapore's schools.

In this chapter, I provide a brief overview of the current study, followed by a discussion of findings according to each of the five research questions. Limitations of the study and implications for students, music teachers, school administrators, and education authorities are addressed in the sections that follow. The chapter ends with a discussion of suggestions for further research and conclusions.

Overview of the Study

Students in three primary and four secondary co-educational public schools located at the north-eastern region of Singapore participated in the study. A total of 1,733 participants, representing 47 intact music classrooms across Primary 6, Secondary 1, and Secondary 2 levels (grades 6 to 8), completed a questionnaire adapted from a study that examined children's motivation to studying music from eight Western and Eastern countries (McPherson & O'Neill, 2010). A response rate of 93.9% was achieved. More than 78% of the participants were Chinese students and the overall sample differed in terms of gender, ethnicity, and secondary school education streams.

A cross-sectional descriptive survey design was implemented to determine students' motivation towards learning music and the other school subjects according to music student status (music, high aspiring, low aspiring) and gender (males, females). A pilot study was administered to streamline research procedures and to refine survey items. The web-based survey questionnaire was administered between July 2009 and October 2009. The survey questionnaire was found to have good psychometric properties as the items reported adequate internal consistency reliabilities. Validity of the scales was established through content validity, face validity, concurrent validity, and construct validity.

Discussion of Findings

This section presents a summary of the findings in relation to each of the five research questions address in the current study:

1. What are typical profiles of music and non-music students?
2. To what extent do music and non-music students differ in their attitudes towards studying music in school as compared to other school subjects?
3. What motivational factors predict music and non-music students' enrollment in instrumental music instruction outside of school?
4. To what extent do male and female students differ in their attitudes towards studying music in school as compared to other school subjects?
5. Are there differences in attitudes towards music as compared to other school subjects among Singaporean students across Primary 6, Secondary 1, and Secondary 2 levels?

Research Question 1

Music Students. Music students were typically females (males: 28.6%; females: 71.4%), Chinese ethnicity (Chinese: 85.7%, Malays: 8.2%, Indians: 3.3%, Others: 3.8%), and enrolled in the more academically inclined Express stream (Express: 74.4%; Normal-Academic: 17.1%;

Normal Technical: 8.5%). Music students, when compared to non-music students, were more likely to be from families that owned a musical instrument at home and had at least one immediate family member with current or previous instrumental music experiences.

An analysis of the sample indicated a high level of involvements in music co-curricular activities (CCAs) amongst music students. For example, 66.5% of all music students were involved in music CCAs in school, of which band, choir, and g*uzheng* ensemble (in rank order) were the most selected music CCAs (Table 4.12). The higher proportion of music students in this study who participated in band and choir activities corresponded with earlier findings that both of these ensembles were among the most participated music CCAs in Singapore schools (MICA, 2010a).

There is also a high level of involvements in private music instruction outside of school. More than half (54.7%) of all music students received private music instruction, of which piano and followed by guitar and Western strings were the most learned musical instruments (Table 4.13). With nearly half (49.3%) of these students received piano instruction outside of school, it was not surprising that piano was the most owned musical instrument in the homes of these music students (Table 4.8).

Whilst Western instruments are generally the preferred musical instruments learned in school, there is also an interest in the learning of Chinese musical instruments in school amongst music students. As in other Eastern countries (Ho, 2003), music students in the sample generally preferred learning Western musical instruments in school, in rank order, voice, brass, Chinese strings, woodwinds, and percussion (Table 4.13). The study also revealed of the popularity of Chinese instrumental instruction amongst music students. This was evident that Chinese strings (e.g., *erhu, guzheng*) were among the most popular musical instruments learned in school (Table

4.13). In addition, the findings also showed that Chinese orchestra and *guzheng* (Chinese zither) ensemble were the most selected music CCAs among music students, after band and choir (Table 4.12). Singapore has seen the development in the Chinese instrumental musical scene such as the inauguration of the Singapore Chinese Orchestra and the Singapore Youth Chinese Orchestra, with the results that these types of musical ensembles are opening up new opportunities for the learning of Chinese musical instruments among music students. Interest in Chinese instrumental music is also evident in the increase in the number of entries submitted for the National Chinese Music Competition, a biennial competition co-organized by the Singapore National Arts Council and the Singapore Chinese Orchestra. The organizers received a total of 353 entries in 2010, which was an increase of 56.9% from the 225 entries in 2002 (NAC, 2010). Chinese instrumental music instruction, therefore, may become a feasible educational option for music students to the study of traditional Western classical music route.

Comparatively, the percentage of musical instrument ownership in the sample seems to be lower when compared with their counterparts in other countries. For example, approximately 80% of English adolescents had at least one instrument at home (Hargreaves & Marshall, 2003) as compared to 57.1% of all students in the current study. Singaporean students typically participate in music CCAs by loaning instruments from the school according to the system whereby all schools in Singapore are given an instrumental grant by the Singapore Ministry of Education (MOE) to purchase CCA musical instruments. It is reasonable to assume that this might have some impact on the percentage of students who are provided with an opportunity to receive formal music instruction if they choose to enroll in music CCAs in school. Interestingly, despite the availability of school instrumental grants, more than half of all families of the music students still owned a musical instrument at home (Table 4.7).

Non-Music Students. Previous research has found that the participation rate for instrumental instruction declined with age, particularly during the early adolescence years (Lamont et al., 2003; O'Neill, 2002). Expectedly, there was a higher percentage of non-music students in the sample as compared to music students. Up to 73% of students in the study were not currently receiving formal music instruction in or outside of school. These non-music students were typically male (84.5% of males) and of the racial minorities (83.2% of Malays; 86.2% of Indians). This is marked and statistically different from music students, who were typically female and of Chinese ethnicity. In terms of CCA participation, they tended to participate in sports activities, followed by uniformed groups, clubs and societies, and performing arts (dance) (Table 4.9).

It is possible that different students are interested in music at different stages, given that 33.3% of the sample (high aspiring group) who was not actively involved in music seemed to be interested in pursuing music at some later stage (Q31). Conversely, there were also students who have ruled themselves out of any musical involvement, where up to 39% of the sample belonged to the low aspiring group. As compared to high aspiring group (males: 51.3; females: 48.7%), the low aspiring group had a statistically higher proportion of males (males: 67.1%, females: 32.9%), and that more than half (52.3%) of all males in the sample were low aspiring non-music students (Table 4.5). It must also be highlighted that more than half (52.0%) of all Normal Technical education stream students were low aspiring students. Overall, both high aspiring and low aspiring groups consisted of a higher proportion of students from Normal Academic (high aspiring: 41.6%; low aspiring: 38.6%) and Normal Technical (high aspiring: 36.9%; low aspiring: 52.0%) streams as compared to the Express stream (high aspiring: 26.1%; low aspiring: 30.8%) (Table 4.6).

When compared to music students (19.7%), non-music students in the study generally did not have any immediate family members with previous or current instrumental music experiences (high aspiring: 33.1%; low aspiring: 47.2%). Additionally, families of non-music students (high aspiring: 34.1%; low aspiring: 29.2%) were less likely to own a musical instrument at home when compared to those of the music students (36.7%). Interestingly, 29.6% of high aspiring students and 20.3% of low aspiring students reported owning a piano or keyboard at home.

Research Question 2

Music students appear to demonstrate positive attitudes towards music in school as compared to non-music students. In particular, they felt competent about their school music, as evident in more than half (56.2%) of all music students responded in the survey that they believed they were good in music (Q17) with 61.9% suggesting that they would do well in music examinations in school (Q26). In addition, 61.5% also responded that school music was easy (Q20). Furthermore they valued learning their music learning, indicating they liked school music (Q11 - 63.4%), regarded music as important in school (Q14 – 52.8%), and believed that music was useful for their everyday life (Q24 – 53.9%) (Appendix G).

Music students value music less when compared to the core subjects, such as English, mathematics, and science (Table 4.21). Music is a non-core and non-examinable subject in the school curriculum and the importance and usefulness of the subject may be lower, particularly in a Singaporean context of high stakes testing that emphasizes the need to perform well in core subjects. According to the hypothesis made by Wigfield and Eccles (2002), these results suggest that music students' higher valuing for core subjects as compared to school music may have long-term implications on their enrollment in secondary or post-secondary music instruction. If

music students start to self-select out of music studies for educational and vocational choices related to core subjects during secondary school, this may exclude them from access to certain music-related diplomas or degrees and careers, which depend on their previous enrollment in secondary and post-secondary advanced music courses.

Comparatively, non-music students appear to demonstrate less positive attitudes towards music in school when compared to music students. They held low competence beliefs for school music, whereby only 26.6% responded that they were good in music (Q17) and 36.3% indicated they would do well in music examinations (Q26). In addition, a majority of them (58.8%) considered the subject difficult to learn. Furthermore, non-music students held lower perceived valuing for school music, only 34.7% responded that they liked school music (Q11), 30.1% found school music important to learn (Q14), and 33.5% believed that learning school music was useful in their everyday life (Q24) (Appendix G).

The above results seem to contradict to earlier studies by Chua and Koh (2007) that Singaporean primary and secondary school students enjoyed classroom music lessons. One reason for the discrepancy of results may be due to the design of question items (i.e., a quite a bit/very much options) that may have prompted unknowingly favorable outcomes. In addition, the previous questionnaires were single subject surveys that did not require participants to response based on simultaneous considerations of the other school subjects as needed in this study.

McPherson and O'Neill (2010) reported that music students held higher competence beliefs and values and lower task difficulty across school subjects than non-music students. This pattern was observed in the current study with low aspiring students but not high aspiring non-music students. Music students possessed higher competence beliefs and held greater valuing for

a majority of school subjects (no significant difference for physical education and science) than low aspiring students. It was also found that low aspiring students held the least valuing for music in school and possessed the lowest competence beliefs for the subject when compared to other school subjects. There was, however, no significant difference between music students and high aspiring students in the perceived competence and valuing of a majority of school subjects (except music and physical education). What is immediately evident from these findings is that both music and low aspiring students believe they have high competence beliefs in a school subject only if they also place high task values on the same subject (Wigfield & Eccles, 1995).

The findings that both high aspiring and low aspiring students differed in their competence beliefs and valuing in music may be interesting. When compared to low aspiring students, high aspiring students felt competent about their school music, found the subject easier, and valued their music learning. This suggests that high aspiring students who seemed interested in pursuing instrumental music instruction outside of school (Q31) also tended to have higher competence beliefs and possess greater task values for music in school than low aspiring students. This finding aligns with Eccles et al.'s (1983) expectancy-value theory whereby individuals are likely to make an educational choice if they hold higher competence beliefs and values for an assigned task.

Research Question 3

The expectancy-value theoretical model posits that the intention to enroll participation in an activity is predicted by individuals' perceived competence and the values one assigns to the activity (e.g., Wigfield & Eccles, 1995; Wigfield & Eccles, 2002). Consistent with this hypothesis, findings from the current study indicated that students' perceived competence and

task values for a particular school subject have been found positively related to their intention to enroll in further instruction outside of school (Table 4.25).

In accordance with this model, the predictors for non-music students' intention to enroll in instrumental music instruction outside of school (Q31) was not how important they believed music to be, but in their perceived competence for studying music in school, followed by their perceptions of the usefulness of the subject, and the extent to which they were interested in the subject (Table 4.27). This was evident when the survey found only 30.1% of non-music students responded the importance of learning music in school (Q14) (Appendix G). By music student status, the higher mean perceived competence ratings (high aspiring: 3.37; low aspiring: 2.62) and task values (high aspiring: 3.42; low aspiring: 2.65) for school music as perceived by high aspiring students suggests that they will be more likely than low aspiring students to enroll in instrumental music instruction outside school.

The predictors for music students' intention to enroll in instrumental music instruction outside of school, according to regression analysis, were their perceived usefulness for school music, followed by their competence beliefs in the subject (Table 4.26). This means that music students who aspire to enroll in instrumental music instruction outside of school are likely to be those who also perceive school music to be useful and felt competent in the subject. For music students who were not currently receiving private music instruction, 73.0% of them indicated a positive interest in receiving instrumental music instruction outside of school if given the opportunity (Q31). Interestingly, those who already had the opportunity to receive music instruction outside of school continued to express positive interest (82.7%) to receive instrumental music instruction outside of school (Q31). This suggests that music students who

are already committed to music appear to demonstrate a relatively firm commitment to continue receiving formal musical instruction outside the music classroom.

It is worth noting that both music and non-music students in the current study considered perceived usefulness of school music as the best predictor for their intention to enroll in instrumental music instruction outside of school (Tables 4.26 and 4.27). What this means is that students who believe that music is a useful subject in school (Q23), and regard learning music in relation to their short-term (Q24) and long-term (Q25) future, are more likely to enroll in instrumental music instruction outside of school. Clearly, perceived usefulness is an important factor to consider, particularly for music students who are more likely than non-music students to enroll in subsequent music courses given their higher competence beliefs and greater valuing for music in school.

Research Question 4

Males and females held different perceived competence and task values for a majority of school subjects (McPherson & O'Neill, 2010). Males held higher competence beliefs and greater valuing than females for mathematics, science, and physical education but with an exception: there was no difference between students of either gender on the value they held for mathematics as found in earlier studies (McPherson and O'Neill, 2010; Wigfield et al., 1991). As mathematics is a subject that is tested in high stakes Primary School Leaving Examination (PSLE), it is expected that females will also assign equal valuing of the subject as their male counterparts.

There are different developmental patterns in terms of competence beliefs and task values for each gender across the primary-secondary transition. The analysis showed females' perceptions of competency and valuing of music remained unchanged over the transition. Males, on the other hand, possessed greater perceived competence and valuing for the subject at the

Secondary 1 level (Figures 4.2 and 4.6). It is particularly encouraging that Singapore male adolescents seemed more positive about school music after the primary-secondary transition, since previous research has indicated that males could be disengaged from music in school at this age (Comber, Hargreaves, & Colley, 1993).

Overall, valuing of music for both genders at the Secondary 1 level was found to be higher as compared to Secondary 2 levels, suggesting that males' and females' valuing of music decrease with age. This also means that older Secondary 2 students' attitudes towards music become less positive when compared with their younger Secondary 1 counterparts.

Research Question 5

Three trends emerged in this cross-sectional study. Firstly, students in the study tended to hold similar levels of their own personal competency in a majority of school subjects during the period of transition into secondary school. This means that there are no difference in students' competence beliefs attached to music, mathematics, science, physical education, and art progressing at the Primary 6 and the Secondary 1 levels. There was also no difference in students' competence beliefs for these subjects at Secondary 1 and Secondary 2 levels (Table 4.23). Previous research using growth modeling procedures has indicated that the most rapid period of decline in competence perceptions occurred in the elementary school years (Jacobs et al., 2002). The findings in this study suggest that students' competence beliefs for a majority of school subjects may have already arrived at their respective tipping points during the primary school years such that there is no difference in competence perception at the Secondary 1 and Secondary 2 levels.

The second trend revealed that students' perceived levels of difficulty for a majority of school subjects increased at the Secondary 1 level when compared to the Primary 6 level. In

other words, the older Secondary 1 participants reported music, physical education, and art as more difficult than their younger Primary 6 counterparts but there was no difference in the perceived task difficulty at the Secondary 1 and Secondary 2 levels (Table 4.23). By music student status, music students and high aspiring non-music students perceived increasing difficulty in learning school music across the primary-secondary transition (Figure 4.4). Interestingly, low aspiring students' perceived task difficulty for music remained unchanged at the Primary 6 and Secondary 1 levels (Figure 4.4).

Finally, there was a lower valuing of the different school subjects from the older Secondary 1 students when compared with the younger Primary 6 students. Secondary 1 students generally expressed lower valuing for English, mathematics, and physical education than Primary 6 students. Close scrutiny of the results revealed that there was no difference in the valuing of core subjects, such as science and mathematics, between Secondary 1 and Secondary 2 students. Valuing of non-core subjects (music, physical education and art) for Secondary 2 students, on the other hand, was lower than Secondary 1 students. This means that the older Secondary 2 students' attitudes towards studying non-core subjects become less positive when compared with their younger Secondary 1 counterparts.

Limitations of the Study

The participants in this study were not representative of the national school population. They were, however, typical of co-educational primary and secondary public schools that offered the three secondary education streams located at the north-eastern region of Singapore. Because of the demographic makeup of the region, a higher proportion of students lived in public houses and fewer parents possessed a university degree, compared to the national demographic.

A limitation of the study was the use of cross-sectional survey methodology that involved collecting data from different students in different grades at one point in time, rather than a longitudinal survey that would identify changes over time. It would be difficult to draw cause-and-effect relationships from cross-sectional results as such.

It can be noted that non-music students were classified into high aspiring and low aspiring groups according to their interest in receiving formal instrumental music instruction outside of school when given the opportunity (Q31). The analysis of the study could exclude students who may not consider vocal singing or voice as a form of instrumental music when responding to Q31. In addition, I chose to include non-music students who responded a rating of '3'out of a 5-point Likert scale as low aspiring students to ensure that high aspiring students (response ratings of '4' and '5') were the ones who were positive in receiving instrumental music outside of school. Given that there was no clearly defined label for a rating of '3' in Q31, it would be possible that some students defined this rating as "don't know" or "not sure." There would be a likelihood that these students could belong to either the low aspiring or high aspiring groups.

Another limitation was the reliance of students' self-reports for both predictors and outcomes of music and other school subjects which may be impacted by their biasness towards a particular school subject based on factors such as individual's cultural and societal milieu, and past performance and achievements related to a particular subject.

Implications from the Study

A major purpose of this study was to draw conclusions that might help shape future decisions by education authorities, curriculum planners, school administrators, and music teachers on how to foster music instruction in Singapore schools. This section provides

implications for music education in Singapore on the following issues: (a) valuing of music, (b) positive musical experiences, (c) differentiated teaching, and (d) application of Eccles et al.'s (1983) expectancy-value theoretical framework.

Valuing of Music

The findings of this study involving Singaporean students are in accord with previous research involving Western and Eastern countries (McPherson & O'Neill, 2010) indicating that music is one of the least valued school subjects (Table 4.21). Importantly, results show that even music students perceive school music as less valuable than their other school subjects.

Results imply a need for education authorities and music teachers to re-assess and understand why students value music less as compared to other school subjects, and to more fully understand what this means in the context of the Singapore government's vision of *Thinking Schools, Learning Nation* for education. Given that the aims for formal education in Singapore are to provide students with a holistic education and broad-based education (Hodge, 2008), education authorities and music teachers may need to re-define school music as a discipline, and understand how it may better align itself in status against other school subjects.

Positive Musical Experiences

Non-music students possess low valuing for music in school (Table 4.21). The fact that only a third of non-music students perceive music as useful to their daily lives (Q24) raises an issue whether the current music curriculum and content taught in the classroom is relevant to them. Given that music teachers have the flexibility to customize their teaching in relation to learning outcomes prescribed in the national music syllabus (Chapter 1), they may need to explore new curriculum initiatives, such as the integration of popular music into the various classroom musical activities and the increased use of technology in music, as a means of

increasing the relevance of school music to music outside of school to individual students. Moreover, non-music students' perceptions of their low competence for school music (Table 4.21) also highlight the importance for music teachers to create an environment for these students to experience success in music making.

Differentiated Teaching

In a classroom, students bring with them different expectations for classroom music. This is particularly so when both music and non-music students have different competence beliefs and values about music in school (Table 4.21). Music teachers have to cater musical activities according to the varying students' needs within the same music classroom. Students with higher musical abilities need to be challenged to bring them to a higher level of music appreciation. At the same time, those with lower musical abilities should feel interested and stimulated in musical activities that are designed according to their level of music competency.

A critical examination of the findings revealed that half of all Normal Technical students were low aspiring non-music students (Table 4.6). These low aspiring students typically considered school music as their least competent and least valued subject in school as compared to other school subjects (Table 4.21). The conventional approach of teaching music may not apply for these students. Music teachers may need to explore different forms of providing music to make it appear to be relevant to these students. For example, music teachers could try to make music a more experiential subject for these students by completely changing how it is taught and focusing on the creative aspects of the subject.

A concern is that the current national music curriculum uses a set of common music learning outcomes to cater for all students regardless of their education streams (Ministry of Education, 2008b). The use of standardized learning outcomes across education streams may not

account for the interest and expectations of the diverse music students in the Singapore music education system. Music curriculum planners may need to shape the music curriculum according to the different types of students such that music learning outcomes will capture students' interest in music and also relate to their everyday life experience.

Application of Eccles et al.'s (1983) Expectancy-value Theoretical Framework

It is evident that Eccles et al.'s (1983) expectancy-value theory as applied in this study can use to contextualize Singaporean music education. Students' competence beliefs are positively related to their task values for all school subjects (Table 4.24), and that both competence beliefs and task values predict students' intention to receive instrumental music instruction outside of school (Table 4.25) demonstrate that the expectancy-value theoretical framework could be used to explain early adolescents' motivation in studying music. Therefore researchers and teachers can have confidence in using this framework to pursue various research and practical applications related to music in Singapore.

The findings that students' perceptions of the usefulness of music best predict music students' intention to enroll in instrumental music instruction outside of school (Table 4.25) deserves serious attention from music teachers and education authorities. Even though not every music students will eventually choose music as a profession, it is reasonable to suggest that they should be given the opportunity to consider a full range of available courses and vocational options in music before they decide to self select out of music studies. Music students are the ones who are most likely to be professional musicians and music educators in the country as compared to non-music students. Curriculum planners and music teachers may need to define to music students how a musical education is a viable educational choice, an appropriate career

option, and more than a mere leisure activity through various platforms such as school performances, music career talks, and career guidance programs.

Suggestions for Further Research

Researchers using a self-report questionnaire that deals with a large sample size could consider using web-based survey method that students complete in school computer laboratories with computers during school hours. Using web-based survey not only is cost and time effective, it also greatly minimizes missing responses. A note, however, is the need for a research environment that supports internet infrastructure as well as the anticipation for unexpected computer technology problems in the process of data collection.

It is important for future researchers to consider "cost", which is a component of the task value construct in Eccles et al.'s (1983) expectancy-value theoretical framework. This may be particularly to the Singaporean context when students' decision to enroll in a course is often made in a social-academic environment that is test-driven. For example, the decision to enroll in outside school instruction in a particular academic domain (Q31) may be associated with the elimination of domain choices. Receiving instrumental music instruction may possibly take students' time and effort away from doing well in core examinable subjects that may be consequential to their successful progression in the Singapore education system. Furthermore, cost has been the least studied of the different components of task values despite the theoretical importance of cost to educational choices (Wigfield, Tonks, & Klauda, 2009). Future researchers may need to further explore on the use of existing survey items related to cost in order to determine if cost is crucial in the prediction of adolescents' educational choices in and outside of school.

The unique developmental pattern for students' valuing of music across the primary-secondary transition needs further clarification. The cross-sectional findings in this study

demonstrate the emergence of a higher valuing of music amongst older males than younger males after the primary-secondary transition. Future longitudinal studies using Hierarchical Linear Modeling (HLM) could be used to determine gender differences in the valuing of music at four time points surrounding the primary-secondary transition (twice each year during the Primary 6 and Secondary 1 level). Because HLM is not limited to linear change, it would allow researchers to examine any rising and declining patterns in gender differences over the course of development across the primary-secondary school transition.

The study of high aspiring non-music students provides the field with an awareness of a sub-group of non-music students who expresses positive interest in receiving instrumental music instruction outside of school if they are given the opportunity. The study provided demographic information and analyzed their general attitudes towards learning music and the other subjects in school. The fact that high aspiring students in the current study displayed higher competence beliefs and valuing for music in school demonstrated their potential to become music students if they would have been identified early by music teachers or have been given the opportunity to receive formal music instruction either in or outside of school. This suggests the need to gain a more in-depth understanding of these high aspiring non-music students through various types of research methodologies.

The findings that a relatively high percentage of non-music students whose families owned a musical instrument at home (Table 4.8) suggests that some of these students may have previously received music instruction but ceased learning the instrument subsequently. Past research has found that the decision to cease learning an instrument may be due to a possible lack of participation of parent-child musical activities at home as younger children generally need close supervision when practicing their instruments (McPherson, 2009). In addition, within

the expectancy-value model, parent-specific behavior, such as the encouragement to participate in various activities, appears to have strong influences on their children's self and task beliefs for the task they are engaging (Fredricks & Eccles, 2002). Clearly, future research could further explore parents' attitudes towards their children's participation in formal music instruction to determine if there is any correlation between parental support and music participation in the Singaporean context.

Finally, future study could involve Singaporean children across the upper primary to junior college (senior high school) years. The data collected could be used to do multiple comparisons on how Singaporean children differ from their foreign counterparts in perceptions for music and other school subjects. Results of the study may provide informed knowledge for education authorities and curriculum planners in order to further refine processes and policies in the Singapore education system.

Conclusion

Singapore prides itself on offering a world-class education system that is consistently ranked highly in international benchmarking assessment exercises for reading (English), mathematics, and science (e.g., PISA, 2009; TIMSS, 2007). A main reason is its strong emphasis on providing high quality education for core academic subjects as it is vital to the survival and economic competitiveness of the country (Gopinathan, 2001). Additionally, the learning of core subjects is essential for students to move up the ladders within the Singapore education system. Furthermore, getting good grades in these subjects would also potentially lead individuals to a stable and successful career in the future.

Virtually every Singaporean student is expected by teachers, parents, and the society-at-large to do well or work hard in core subjects in school whether or not the individual likes it, but

not everyone is expected to like or do well in music. The current study confirms that music in school is one of the least valued subjects when compared to the other school subjects as perceived by Singaporean students. This study also raises concerns whether the recommendation from the *Renaissance City Plan 3.0 Report* (Chapter 1) on achieving an equal emphasis on 'hard' and 'soft' subjects is realistic in Singapore schools. Education authorities need to acknowledge the problem with non-core subjects such as music in school, and help build the entire school curriculum that focuses on a balanced and holistic education, rather than focusing on the core academic subjects.

Music is an important part of aesthetic education in the school curriculum because musical experiences are necessary for all people if their essential humanness is to be realized (Reimer, 1989). All schools, therefore, should make an effort to ensure success of the classroom music, for the sake of Singaporean children. Perhaps in our effort to address the low valuing of music among Singaporean early adolescents, the music profession as a whole may need to advocate music as an important part of aesthetic education in Singapore schools. Advocacy for music education could take many forms and perspectives, but an underlying theme is the aim of trying to understand and articulate the value of music and music education in students' lives both inside and outside of school. What is urgently needed is the articulation of a common vision and unified music philosophy such that the music profession could tell its story to students, parents, teachers, school administrators, and the society-at-large why music education in school is necessary and important in Singapore. Music educators, therefore, need to garner strong support from these stakeholders, and at the same time, work closely with education authorities in order to bring this vision into reality.

In conclusion, the need to assert and substantiate the role music can and should play in the education of all children is a continuing challenge within the Singapore education system, but one that must be addressed if school music is to become a more prominent subject within schools. It is hoped that this investigation of adolescents' motivation to studying music as compared to other school subjects will raise awareness on the current status of music education and thus, invite further conversations on the need to enhance music education in Singapore schools.

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APPENDIX A: EDUCATION SYSTEM IN SINGAPORE

Singapore: A Brief History

While under the British governance that began in 1819, Singapore became a major trading port and the center for the export of rubber. The peace and prosperity of the colony ended in 1942, however, when Singapore fell to the Japanese during World War II and was renamed *Syonan* (Light of the South). Although Britain reclaimed control of the trading port after World War II, post-war Singaporeans were in distinct contrast from the pre-war transient immigrants who largely came from China and India. These post-World War II immigrants clamored for more political freedom and economic opportunities that resulted in frequent industrial strikes and unrest in the colony (Tamney, 1996). Additionally, there was high unemployment and an acute shortage of public housing. A state of emergency was declared in June 1948 when the Malayan Communist Party attempted to take over Malaya and Singapore. The years 1959 to 1965 represented some of the epochal years in Singapore's history. In 1959, the British colony became completely self-governing, and subsequently, became part of Malaysia in 1963 after a referendum that received overwhelming support. The merger proved to be short-lived as Singapore separated from Malaysia on August 9, 1965 to become a sovereign state.

Development of Education System since Independence in 1965

The development of education in Singapore over the past 45 years is generally divided into three phases: Survival-driven education (1965-1978), efficiency-driven education (1978-1997), and ability-driven education (1998-present) (Goh & Gopinathan, 2008).

Survival-driven Education (1965-1978)

On gaining its independence in 1965, the Singapore government began to focus on education to find the quickest and the most effective way to develop an industrialized economy. Bilingualism and the emphasis on industrial-oriented education became two key components in

the education system with the purpose to develop a competent workforce well suited for the industry (Goh & Gopinathan, 2008). Bilingualism had served two purposes. First, the ability to master two languages, i.e., English and individual mother tongues (i.e., Chinese, Malay or Tamil) would not only help in achieving social cohesion in a largely pluralistic society comprised of Chinese majority, Malays, Indians, and Eurasians/ Others, but also ensure that children would grow up informed about their individual ethnic culture. Second, for economic reason, the use of English was seen as a necessary tool in the country's effort to make the world its marketplace (Goh & Gopinathan, 2008).

Efficiency-driven Education (1978-1997)

While the survival-driven phase focused on fulfilling quantitative demands for trained workers that was vital to the survival and economic growth of the country, the efficiency-driven phase focused on upgrading and providing quality education to sustain its economic development and competitiveness. The implementation of streaming or tracking in 1979 was one major component in the effort to reduce educational wastage, a key problem highlighted by a high level education review committee led by the then-deputy Prime Minister Dr. Goh Keng Swee. Streaming enabled students to go as far as possible in school according to their intellectual and learning abilities and thereby achieved the best possible educational options for training and employment. In order to inculcate an awareness of good values, the national curriculum included moral and civics education while continuing to place emphasis on bilingualism, science, mathematics, and technical education.

This period saw the reviewing and upgrading of technical and vocational education in order to turn out technically trained skilled workers (Goh & Gopinathan, 2008). The school curriculum, therefore, emphasized the study of mathematics and science, and all secondary

school male students were required to complete two years of training in technical subjects (i.e., woodwork, metalwork, and technical drawings). In sum, 'education for all' or a one-size-fits-all system of mass education was the key characteristic in this phase of Singapore education system. This policy provided the vehicle that would integrate the different races through a common educational experience with one standardized educational standard and curriculum, medium of instruction, and national examinations that would serve as foundation for the nation's industrializing initiative.

Ability-driven Education (1998-present)

The shift from efficiency-driven education to ability-driven education from the late 1990s was largely in response to globalization and the emergence of a knowledge-based economy that redefined the economic competitive framework of Singapore (Goh & Gopinathan, 2008). Unlike the earlier phases, ability-driven education provided students with greater flexibility and educational choice according to their strengths and interests. In addition, schools were also given more resources and greater autonomy to develop customized curriculum and extracurricular programs (e.g., Music Elective Program, self-initiated co-curricular activities, etc.) to develop and harness students' talents and abilities to their fullest potential. The other major initiatives in this phase included revamping new career paths for teachers, infusing creative thinking and stressing national or citizenship education in the curriculum, as well as making use of Information and Communications Technology (ICT) in teaching and learning (Goh & Gopinathan, 2008).

In sum, in a land-scarce and resource-scarce country that covers an area of 274 square miles (about the size of Rhode Island) and a population of five million (Singapore Department of Statistics, 2009), Singapore's very survival depends solely on its precious human resources.

Since 1965, the Singapore government has continually recognized the importance of providing a sound and robust education system by constantly planning and reviewing educational polices and initiatives that were relevant and responsive to the ever-changing economic and social landscape. This drive towards attaining a world class education system has always been a priority in Singapore as it will always provide strong fundamentals to sustain economic competiveness and good standards of living for its citizens (Gopinathan, 2001).

The Current Education System in Singapore

School Curriculum

The Singapore government's vision for education is *Thinking Schools, Learning Nation*, that aspires to prepare a generation of thinking and committed citizens who are capable of contributing towards the nation's continued growth and prosperity (Ministry of Education, 2008a). Formal education in Singapore aims to provide all students with a holistic and broad based education that incorporates development across a range of physical, cognitive, social, moral, and aesthetic domains in the areas of literacy, numeracy, bilingualism, the sciences, humanities, aesthetics, and physical education (Hodge, 2008). All students learn at least two languages: English, which is the language of administration, and their mother tongue, i.e., Mandarin Chinese, Malay, or Tamil, which serves as an important platform to learn about their respective heritage and cultural values.

Additionally, the Singapore MOE also incorporated several special programs in selected primary schools (grades 1–6), secondary schools (grades 7-10/11), and junior colleges (grades 11-12). These programs include the Music Elective Program, the Art Elective Program, the Gifted Education Program, and the Language Elective Program.

Curriculum Structure

The school academic year usually begins on the second day of January. There are four terms of ten weeks each, with a one-week vacation between the first and second terms, and another between the third and fourth terms. There is a four-week vacation between terms 2 and 3, starting in late-May, and a six-week vacation between terms 3 and 4 that occurs in mid-November.

At age 6, Singaporean children start the primary school, which divides into Foundation Stage (grades 1-4) and Orientation Stage (grades 5–6). Besides learning the core subjects (i.e., languages, mathematics, and science), students will take courses in moral and civics education, health education, physical education, music, and art and crafts. At the end of Primary 6, all students sit for the Primary School Leaving Examination (PSLE).

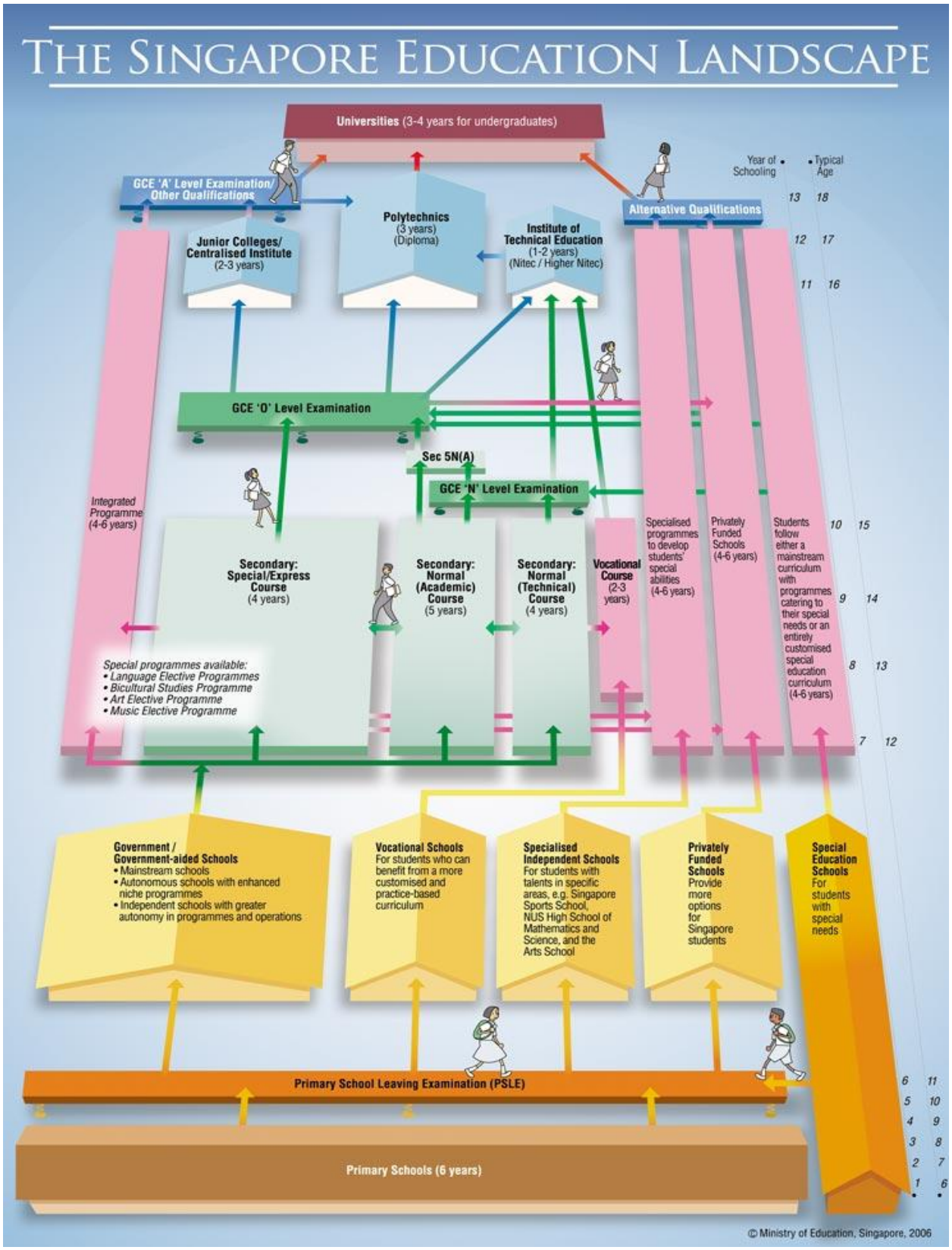
A majority of Primary 6 students (97.2%) continue their education in the secondary schools (Ministry of Education, 2008c). They will be placed into one of three education streams based on their PSLE results: Express stream (63.6%), Normal Academic stream (21.6%), and Normal Technical Stream (12.0%). At the end of Secondary 4 (tenth grade), students in the Express course will sit for the General Certificate of Education (GCE) 'Ordinary' level examination, whereas students in the Normal Academic and Normal Technical courses will sit for the GCE 'Normal' level examination. Normal Academic stream students who perform well at the GCE 'Normal' level examination spend an additional fifth year to sit for the GCE 'Ordinary' level examination.

By the end of Secondary 2 (eighth grade), students elect a combination of six to eight school subjects that they will take for the GCE examinations. All students need to enroll in courses related to *Languages* (English and Mother Tongue), *Mathematics* (e.g., Elementary

Mathematics, Additional Mathematics), *Sciences* (e.g., Physics, Chemistry), and *Humanities* (e.g., History, Geography). Students may also choose other electives, such as Music, Visual Art, Design and Technology, or Food and Nutrition. Students who complete the secondary education typically go on to polytechnics, junior colleges, or the Institutes of Technical Education, depending on their academic performance at the GCE examinations (Appendix B).

Taken together, this section has provided basic information on the education system of Singapore, which is important for the reader to understand.

APPENDIX B: THE SINGAPORE EDUCATION LANDSCAPE (2010)



APPENDIX C: INSTITUTIONAL REVIEW BOARD APPROVAL

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Bureau of Educational Research
College of Education
38 Education Building
1310 South Sixth St.
Champaign, IL 61820

May 15, 2009

Chee Kang Koh
Music Education Department
2134 Music Building
MC-056

Dear Chee Kang,

On behalf of the College of Education Human Subject Committee, I have reviewed and approved your research project entitled "Singapore adolescents' motivational beliefs about music and other school subjects based on their gender and school-based extracurricular activities." I find that this project meets the exemption criteria for federal regulation 46.101(b)1, for research involving normal educational topics where the identity of the participants is protected.

No changes may be made to your procedures without prior Committee review and approval. You are also required to promptly notify the Committee of any problems that arise during the course of the research.

Good luck with your research.

Anne S. Robertson
College of Education Human Subjects Review Committee

Cc: Dr. Gary McPherson

telephone 217-333-3023 • fax 217-244-0538

APPENDIX D: THE MINISTRY OF EDUCATION APPROVAL

Request for Approval

University of Illinois

at Urbana-Champaign

School of Music

College of Fine and Applied Arts
2136 Music Building
1114 W. Nevada Street
Urbana, IL 61801

14 April 2009

Teo Kie Eng (Ms)
Head, Data Administration 3
Planning Division, Ministry of Education

Dear Ms Teo,

REQUEST FOR APPROVAL TO COLLECT DATA FROM SCHOOLS

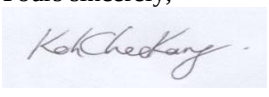
I am a Ministry of Education (MOE) education officer who is on no-pay professional development leave (PDL) to pursue my Doctor of Education in music education at the University of Illinois at Urbana-Champaign (UIUC).

My dissertation research is entitled "Singapore Adolescents' Motivational Beliefs about Music and other School Subjects according to their Extracurricular Participation". A key purpose of this study is to examine adolescents' expectations and valuing of music and other school subjects from three specific grade levels (Primary 6, Secondary 1, and Secondary 3) and according to their participation in the performing arts, sports/games, or uniformed group co-curricular activities. This study will potentially fill a large gap in the research on how adolescents learn music in Singapore and findings of this study will provide valuable insights for music teachers, principals, and parents about the benefits of music learning. Most importantly, the study will provide a better understanding of how adolescents' beliefs about their ability and their interest in different school subjects may impact on their educational choices.

A regulation of the Institute Review Board (IRB) at the UIUC is that formal permission has to be granted by MOE before I can undertake my study in Singapore schools. I am therefore requesting you to provide me with a letter that authorizes me to approach school principals whom I have determined to help with my study. For further information, please see attached (1) research proposal; (2) letter of recommendation from Dr Gary McPherson, my dissertation advisor, and (3) web survey questionnaire.

Please feel free to contact me at ckoh@illinois.edu if you have any clarifications. I look forward to hearing from you as soon as possible so that I could complete my IRB application process. Thank you.

Yours sincerely,



Koh Chee Kang
MOE Education Officer and Graduate Student of UIUC

Approval Letter

1 NORTH BUONA VISTA DRIVE
SINGAPORE 138675
REPUBLIC OF SINGAPORE

Telephone: 6872-1110
Telefax : 6775-5826
CS-mailbox: GVT 036
e-mail: contact@moe.gov.sg

Personal e-mail address:
E-mail: Teo_Kie_Eng@moe.gov.sg

Ministry of Education
SINGAPORE

EDUN N32-07-005

Request No.: **RQ20-09(04)**

27th April 2009

Mr Koh Chee Kang
300 S. Goodwin Ave Apt 613
Urbana, Illinois 61801
USA

Dear Mr Koh

STUDY ON "SINGAPORE ADOLESCENTS' MOTIVATIONAL BELIEFS ABOUT MUSIC AND OTHER SCHOOL SUBJECTS ACCORDING TO THEIR EXTRACURRICULAR PARTICIPATION"

I refer to your application letter dated 14th April 2009 requesting for approval to collect data from school.

2 I am pleased to inform you that the Ministry has no objection to your request to conduct research in 2 primary schools and 4 secondary schools. Please use the *attached letter, including Annex A, the application form and the approved questionnaires* to seek approval from the principals and during the actual study.

3 Please observe the following conditions of approval for conducting study in school(s):

a) to adhere to the approved research proposal;
b) not to publish your findings without clearance from the Ministry of Education;
c) to make sure that the participation by the school(s) is/are duly recorded in Annex A;
d) to complete the study in school(s) within 6 months from the date of this letter.

4 Please acknowledge receipt of this letter by contacting me at Tel: 68796065. Alternatively, I can be reached at the e-mail address at the top right hand corner of this letter.

Yours sincerely

Teo Kie Eng (Ms)
Head, Data Administration 3
Data Administration Centre
for PERMANENT SECRETARY (EDUCATION)
N3207005/RQ20-09(04)

Public Service for the 21st Century

Letter to School Principal

1 NORTH BUONA VISTA DRIVE
SINGAPORE 138675
REPUBLIC OF SINGAPORE

Telephone: 6872-1110
Telefax : 6775-5826
CS-mailbox: GVT 036
e-mail: contact@moe.gov.sg

Personal e-mail address:
E-mail: Teo_Kie_Eng@moe.gov.sg

Ministry of Education
SINGAPORE

EDUN N32-07-005

Request No.: **RQ20-09(04)**

24th April 2009

To: Principal of Primary and Secondary Schools

STUDY ON "SINGAPORE ADOLESCENTS' MOTIVATIONAL BELIEFS ABOUT MUSIC AND OTHER SCHOOL SUBJECTS ACCORDING TO THEIR EXTRACURRICULAR PARTICIPATION"

The Ministry has no objection to the research proposed by Mr Koh Chee Kang, a Doctoral student at the University of Illinois. **You may decide** whether or not to allow him to conduct the research in your school. If you do, please:

i) check that the approved research proposal should be adhered to;

ii) inform your teachers/pupils that participation in the study is voluntary and they need not provide any sensitive information (e.g. name and NRIC No.);

iii) record your school's participation by completing the form as shown in Annex A;

iv) note that the researcher is granted a period of 6 months starting from the date of this letter to complete the research.

2 If you require any clarifications, please contact the researcher through the contact number as stated in the application form. Thank you.

Yours sincerely

Teo Kie Eng (Ms)
Head, Data Administration 3
Data Administration Centre
N3207005/RQ20-09(04)

Public Service for the 21st Century

APPENDIX E: INFORMATION LETTERS AND INFORMED CONSENT

Information Letter

University of Illinois
at Urbana-Champaign

School of Music

College of Fine and Applied Arts
2136 Music Building
1114 W. Nevada Street
Urbana, IL 61801

Dear Principal,

INVITATION TO PARTICIPATE IN AN IMPORTANT RESEARCH

You are invited to participate in a research project on Singaporean adolescents' motivational beliefs about music and other school subjects (Art, English, Maths, PE, Science, and Social Studies) according to gender and their co-curricular participation. This project will be conducted by Chee-Kang Koh, a MOE education officer and a doctoral candidate studying in the Music Education Department at the University of Illinois at Urbana-Champaign.

For his dissertation, Chee-Kang, with the assistance of your music teachers, will conduct a 20-minute web-based survey in your computer laboratories with five randomly selected Primary 6 classes during their music or art lessons. This study will provide valuable insights for principals, teachers, and parents into the motivational forces which impact on students' choice of subjects and the benefits they derive from learning music as compared to other school subjects according to their participation in the performing arts, sports/games, or uniformed group CCAs.

The risk to your students' participating in this study involves no more than minimal risk as it only requires them to complete a web-based survey. In addition, your students' participation in this project is completely voluntary, and they are free to withdraw from the study at any time and for any reason without penalty. The data derived from the study would be used in publications and presentations, but participating schools will not be identified by name as pseudonyms will be used to replace any possible identifying information.

This study has been approved by the Ministry of Education as well as the University of Illinois's Institutional Review Board in accordance with the respective organization's regulations. You will receive a copy of the summative report after this study is completed.

If you have any questions regarding the purpose or procedures of the research, please email Chee-Kang Koh at ckoh@illinois.edu or Dr Gary McPherson at gem@illinois.edu. I look forward to the opportunity of working with your school on this important research. Hope to hear from you soon.

Sincerely

Chee-Kang Koh, Graduate Student

Dr. Gary McPherson, Professor

Parental Informed Consent Letter

University of Illinois
at Urbana-Champaign

School of Music
College of Fine and Applied Arts
2136 Music Building
1114 W. Nevada Street
Urbana, IL 61801

Dear Parents,

PARENTAL CONSENT TO PARTICIPATE IN WEB-BASED SURVEY

Your child is invited to participate in an important study about adolescents' motivational beliefs in learning seven school subjects according to their extracurricular participation. Please read this form and ask any questions you may have before you agree to your child being in the study.

If you decide to let your child take part in this study, he/she will be asked to complete a 20 minute web-based survey during his/her school music lessons. Students who participate in the study will have the opportunity to reflect on their learning experiences at school and the role these experiences play in their lives. The risk to your child if he/she takes part in this study involves no more than minimal risk as it only requires the completion of a web-based survey. At the beginning of the music class in which the survey is administered, the researchers will inform all participating students that they are free to withdraw from the study at any time without penalty.

The web-based survey is completely anonymous as the researcher will collect NO identifying information from your child (e.g., no names), nor will such information be transmitted via the Internet. Your child's responses will be strictly confidential and will not be shared with anyone outside the research team. Any data obtained from this study will be held in separate computer files and stored in locked filing cabinets. The data derived from this study could be used in reports, presentations, and publications but only upon approval from the Ministry of Education (MOE). Schools and individuals who participate in this study will not be identified by name as pseudonyms will be used to replace any possible identifying information.

This study has been approved by the Ministry of Education as well as the University of Illinois (USA) Institutional Review Board (IRB) in accordance with the respective organization's regulations. Questions regarding the purpose or procedures of the research should be directed to Koh Chee Kang at 94776294 (hp) or ckoh@illinois.edu. If you have questions or concerns about you or your child's rights as a research participant you may contact the BER at 1-217-333-3023, you could also contact the IRB Administrator at +1-217-333-2670.

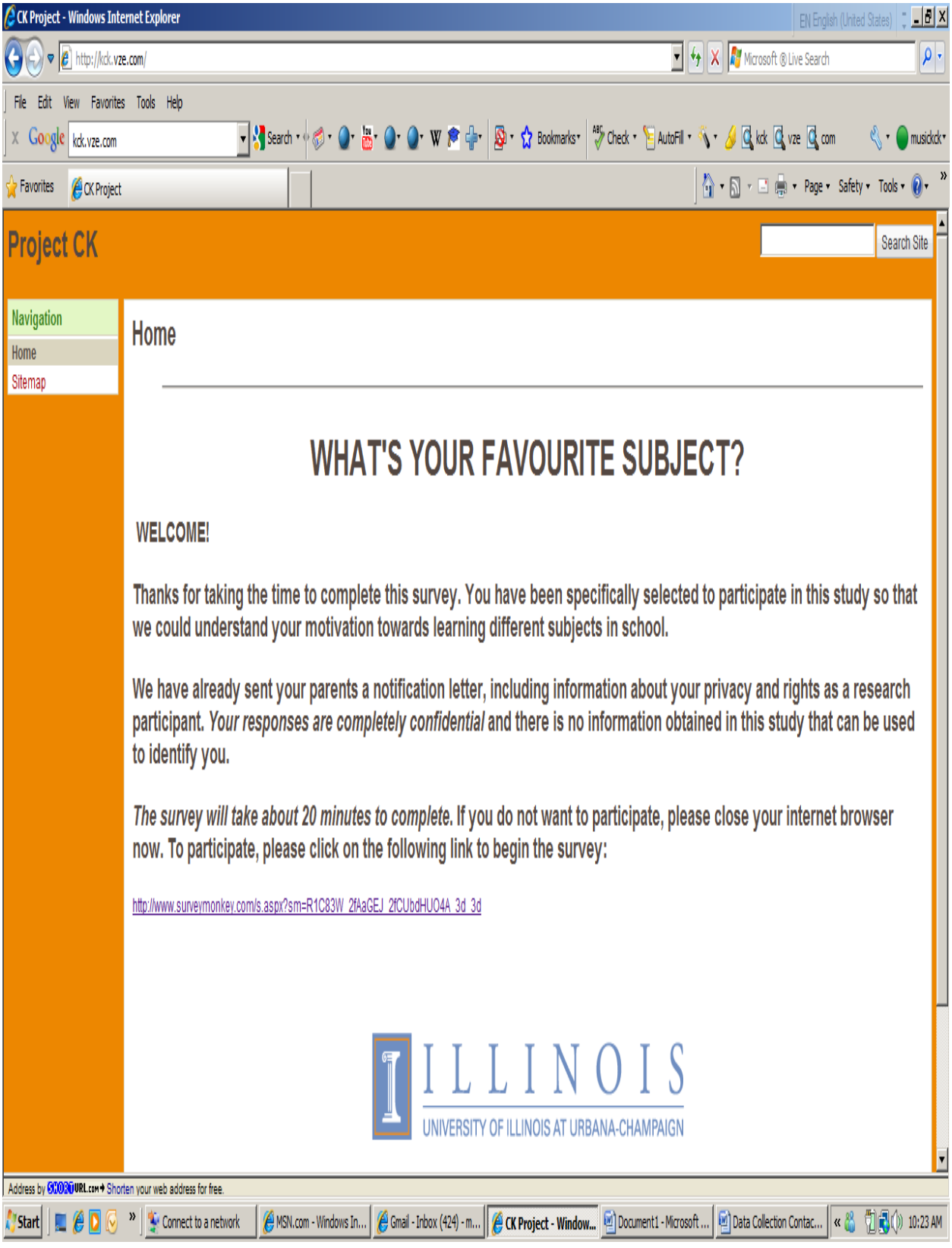
Your decision to allow your child to take part in the study is voluntary. Your child is free to choose not to take part in the study or to stop taking part at any time without any penalty. If you do not permit your child to participate in this study, kindly contact or email Koh Chee Kang or your child's teacher. Otherwise, this letter will serve as your agreement allowing your child to participate in this research project. Thank you.

Sincerely

Koh Chee Kang, Doctoral Candidate

Dr. Gary McPherson, Professor

Participant's Informed Consent



Instruction

WELCOME!
This survey takes about 20 minutes to complete. There are no right or wrong answers and no trick questions. Give your best answer without spending too much time on individual questions. Put your hands up if you have any questions. Your answers are strictly confidential.

Personal Details

1. Your Gender:

- ◯ Male
- ◯ Female

2. Your Race:

- ◯ Chinese
- ◯ Malays
- ◯ Indians
- ◯ Other Ethnic Groups

3. Your School Level:

- ◯ Primary 6
- ◯ Secondary 1
- ◯ Secondary 2

Personal Details

4. Your Stream:

- ◯ Express/Special Stream
- ◯ Normal (Academic) Stream
- ◯ Normal (Technical) Stream

Your CCA

5. Your CORE/ MAIN CCA is: (Choose ONE option)

- ◯ Performing Arts (including MUSIC and DANCE)
- ◯ Sports/Games
- ◯ Uniformed Groups
- ◯ Clubs & Societies
- ◯ I don't have any CCA

Your CCA

6. What's your Performing Arts CCA? (Choose ONE option)

- ◯ Angklung/ Gamelan/ Kulintan
- ◯ Band (Brass/ Symphonic/ Marching)
- ◯ Choir
- ◯ Chinese Orchestra
- ◯ Guitar
- ◯ Guzheng
- ◯ Handbells/Handchimes
- ◯ Harmonica
- ◯ Harp
- ◯ Indian Orchestra
- ◯ Strings
- ◯ Chinese Dance
- ◯ Indian Dance
- ◯ International / Western Dance
- ◯ Malay Dance
- ◯ Others

Your CCA

7. What's your Sports/Games CCA? (Choose ONE option)

Sports/Games CCA

Name of Sports/Games CCA ☐

Your CCA

8. What's your Uniformed Group CCA? (Choose ONE option)

Uniformed Group CCA

Name of Uniformed Group CCA ☐

Your CCA

9. What's your Clubs/Societies CCA? (Choose ONE option)

Clubs/Societies CCA

Name of Clubs/Societies CCA ☐

Music CCA

10. If you join a Music CCA, what musical instrument(s) do you learn?

☐

What you enjoy learning

11. At school, how much do you LIKE learning:

	1 (Do not Like)	2	3	4	5 (Like a lot)
General Music	○	○	○	○	○
Science	○	○	○	○	○
Physical Education (PE)	○	○	○	○	○
Mathematics	○	○	○	○	○
English Language	○	○	○	○	○
Art	○	○	○	○	○
Social Studies (include History/Geography)	○	○	○	○	○

12. At school, how INTERESTING do you find:

	1 (Not Interesting)	2	3	4	5 (Very Interesting)
Social Studies (include History/Geography)	○	○	○	○	○
General Music	○	○	○	○	○
Science	○	○	○	○	○
Physical Education (PE)	○	○	○	○	○
Mathematics	○	○	○	○	○
English Language	○	○	○	○	○
Art	○	○	○	○	○

13. Compared to your other school subjects, how INTERESTED are you in:

	1 (My Least Interested Subject)	2	3	4	5 (My Most Interested Subject)
Art	○	○	○	○	○
Social Studies (include History/Geography)	○	○	○	○	○
General Music	○	○	○	○	○
Science	○	○	○	○	○
Physical Education (PE)	○	○	○	○	○
Mathematics	○	○	○	○	○
English Language	○	○	○	○	○

What you find important

You might think that some subjects are more important than others, because they fit with what you believe is important to learn at school. For example, you might think that Maths is more important than Science. Please answer the following questions about how important these subjects are for you.

14. For you, how IMPORTANT is it to learn:

	1 (Not Important)	2	3	4	5 (Very Important)
English Language	○	○	○	○	○
Art	○	○	○	○	○
Social Studies (include History/Geography)	○	○	○	○	○
General Music	○	○	○	○	○
Science	○	○	○	○	○
Physical Education (PE)	○	○	○	○	○
Mathematics	○	○	○	○	○

15. For you, how IMPORTANT is it to master:

	1 (Not Important)	2	3	4	5 (Very Important)
Mathematics	○	○	○	○	○
English Language	○	○	○	○	○
Art	○	○	○	○	○
Social Studies (include History/Geography)	○	○	○	○	○
General Music	○	○	○	○	○
Science	○	○	○	○	○
Physical Education (PE)	○	○	○	○	○

16. For you, how IMPORTANT is it to score high marks in:

	1 (Not Important)	2	3	4	5 (Very Important)
Physical Education (PE)	○	○	○	○	○
Mathematics	○	○	○	○	○
English Language	○	○	○	○	○
Art	○	○	○	○	○
Social Studies (include History/Geography)	○	○	○	○	○
General Music	○	○	○	○	○
Science	○	○	○	○	○

What you are good at

17. How GOOD are you in:

	1 (Not Very Good)	2	3	4	5 (Very Good)
Science	○	○	○	○	○
Physical Education (PE)	○	○	○	○	○
Mathematics	○	○	○	○	○
English Language	○	○	○	○	○
Art	○	○	○	○	○
Social Studies (include History/Geography)	○	○	○	○	○
General Music	○	○	○	○	○

18. Compared to your other subjects, how GOOD are you in:

	1 (My Worst Subject)	2	3	4	5 (My Best Subject)
Science	○	○	○	○	○
Physical Education (PE)	○	○	○	○	○
Mathematics	○	○	○	○	○
English Language	○	○	○	○	○
Art	○	○	○	○	○
Social Studies (include History/Geography)	○	○	○	○	○
General Music	○	○	○	○	○

19. If you were to arrange all students in your class from best to worst, WHERE WOULD YOU PUT YOURSELF for each of these subjects?

	1 (The Worst)	2	3	4	5 (The Best)
Physical Education (PE)	○	○	○	○	○
Mathematics	○	○	○	○	○
English Language	○	○	○	○	○
Art	○	○	○	○	○
Social Studies (include History/Geography)	○	○	○	○	○
General Music	○	○	○	○	○
Science	○	○	○	○	○

What you find difficult

20. How DIFFICULT are the following subjects for you?

	1 (Very Easy)	2	3	4	5 (Very Difficult)
Social Studies (include History/Geography)	○	○	○	○	○
General Music	○	○	○	○	○
Science	○	○	○	○	○
Physical Education (PE)	○	○	○	○	○
Mathematics	○	○	○	○	○
English Language	○	○	○	○	○
Art	○	○	○	○	○

21. Compared to your other subjects, how DIFFICULT are the following?

	1 (My Easiest Subject)	2	3	4	5 (My Hardest Subject)
Art	○	○	○	○	○
Social Studies (including History/Geography)	○	○	○	○	○
General Music	○	○	○	○	○
Science	○	○	○	○	○
Physical Education (PE)	○	○	○	○	○
Mathematics	○	○	○	○	○
English Language	○	○	○	○	○

22. At school, how DIFFICULT is it for you to score high marks in:

	1 (Very Easy)	2	3	4	5 (Very Difficult)
English Language	○	○	○	○	○
Art	○	○	○	○	○
Social Studies (including History/Geography)	○	○	○	○	○
General Music	○	○	○	○	○
Science	○	○	○	○	○
Physical Education (PE)	○	○	○	○	○
Mathematics	○	○	○	○	○

What you find useful

Some things that you learn in school help you to do things better outside of class. For example, learning about plants might help you to grow a garden. Answer the following questions about how USEFUL you think your school subjects are.

23. At school, how USEFUL is the information you learn in:

	1 (Not Useful)	2	3	4	5 (Very Useful)
Physical Education (PE)	◯	◯	◯	◯	◯
Mathematics	◯	◯	◯	◯	◯
English Language	◯	◯	◯	◯	◯
Art	◯	◯	◯	◯	◯
Social Studies (include History/Geography)	◯	◯	◯	◯	◯
General Music	◯	◯	◯	◯	◯
Science	◯	◯	◯	◯	◯

24. How USEFUL is learning the following subjects for your every day life outside school?

	1 (Not Useful)	2	3	4	5 (Very Useful)
Social Studies (include History/Geography)	◯	◯	◯	◯	◯
General Music	◯	◯	◯	◯	◯
Science	◯	◯	◯	◯	◯
Physical Education (PE)	◯	◯	◯	◯	◯
Mathematics	◯	◯	◯	◯	◯
English Language	◯	◯	◯	◯	◯
Art	◯	◯	◯	◯	◯

25. How USEFUL do you think learning the following subjects will be for you when you leave school and get a job?

	1 (Not Useful)	2	3	4	5 (Very Useful)
General Music	◯	◯	◯	◯	◯
Science	◯	◯	◯	◯	◯
Physical Education (PE)	◯	◯	◯	◯	◯
Mathematics	◯	◯	◯	◯	◯
English Language	◯	◯	◯	◯	◯
Art	◯	◯	◯	◯	◯
Social Studies (include History/Geography)	◯	◯	◯	◯	◯

What you expect

26. How WELL do you expect to do at the End-of-Year examination THIS YEAR in:

	1 (Very Poorly)	2	3	4	5 (Very Well)
General Music	◯	◯	◯	◯	◯
Science	◯	◯	◯	◯	◯
Physical Education (PE)	◯	◯	◯	◯	◯
Mathematics	◯	◯	◯	◯	◯
English Language	◯	◯	◯	◯	◯
Art	◯	◯	◯	◯	◯
Social Studies (include History/Geography)	◯	◯	◯	◯	◯

27. Compared to other students in your class, how WELL do you expect to do at the End-of-Year examination this year in:

	1 (Much Worse than other Students)	2	3	4	5 (Much Better than other Students)
Science	◯	◯	◯	◯	◯
Physical Education (PE)	◯	◯	◯	◯	◯
Mathematics	◯	◯	◯	◯	◯
English Language	◯	◯	◯	◯	◯
Art	◯	◯	◯	◯	◯
Social Studies (include History/Geography)	◯	◯	◯	◯	◯
General Music	◯	◯	◯	◯	◯

28. How WELL do you think you will do in these subjects at the End-of-Year examination NEXT YEAR?

	1(Very Poorly)	2	3	4	5 (Very Well)
General Music	◯	◯	◯	◯	◯
Science	◯	◯	◯	◯	◯
Physical Education (PE)	◯	◯	◯	◯	◯
Mathematics	◯	◯	◯	◯	◯
English Language	◯	◯	◯	◯	◯
Art	◯	◯	◯	◯	◯
Social Studies (include History/Geography)	◯	◯	◯	◯	◯

What you do outside school

29. OUTSIDE SCHOOL (excluding CCA), I receive lessons in: (Choose all that apply)

- [ ] Not Applicable
- [ ] Musical instrument (include Singing)
- [ ] Science
- [ ] Sports/Games
- [ ] Mathematics
- [ ] English Language
- [ ] Art
- [ ] Social Studies (include History/Geography)

What you do outside school

30. If you are receiving music lessons OUTSIDE SCHOOL (excluding CCA), what musical instrument(s) do you learn?

What you do outside school

31. If you were to be given an opportunity to learn OUTSIDE SCHOOL (excluding CCA), how much might you want to learn:

	1 (A Little)	2	3	4	5 (A Lot)
Art	○	○	○	○	○
Social Studies (include History/Geography)	○	○	○	○	○
Musical instrument(s)	○	○	○	○	○
Science	○	○	○	○	○
Sports/Games	○	○	○	○	○
Mathematics	○	○	○	○	○
English Language	○	○	○	○	○

Family

32. Who in your FAMILY currently or previously played a musical instrument? (Choose all that apply)

- [ ] None
- [ ] Father
- [ ] Mother
- [ ] Brother
- [ ] Sister

33. What musical instrument(s) do you or your family own at home? (Choose all that apply)

- [ ] No Instrument
- [ ] Piano/Organ
- [ ] Guitar
- [ ] String (Violin, Viola, Cello, etc.)
- [ ] Woodwind (Flute, Clarinet, Sax, etc.)
- [ ] Brass (Trumpet, Trombone, etc)
- [ ] Percussion
- [ ] Chinese Ethnic Instruments
- [ ] Indian Ethnic Instruments
- [ ] Malay Ethnic Instruments
- [ ] Others

APPENDIX G: RESULTS OF SURVEY ITEMS

Survey Items		Ratings of 1 or 2 (%)	Ratings of 3 (%)	Ratings of 4 or 5 (%)	Overall (%)
Q11: At school, how much do you like learning music (no not like-like a lot).	Music Students	10.9	25.7	63.4	100
	Non-Music Students	29.4	35.9	34.7	100
	Overall	24.4	33.1	42.5	100
Q12: At school, how interesting do you find music (not interesting-very interesting).	Music Students	15.2	26.9	57.9	100
	Non-Music Students	31.4	32.8	35.9	100
	Overall	26.9	31.2	41.9	100
Q13: Compared to your other school subjects, how interested are you in music (my least interested subject-my most interested subject).	Music Students	14.3	28.2	57.5	100
	Non-Music Students	33.6	30.6	35.8	100
	Overall	28.3	29.9	41.7	100
Q14: For you, how important is it to learn music (not important-very important).	Music Students	18.9	28.2	52.8	100
	Non-Music Students	35.1	34.7	30.1	100
	Overall	30.7	32.9	36.4	100
Q15: For you, how important is it to master music (not important-very important).	Music Students	16.0	26.5	57.5	100
	Non-Music Students	33.7	33.0	33.3	100
	Overall	28.9	31.2	39.9	100
Q16: For you, how important is it to score high marks in music (not important-very important).	Music Students	14.5	22.3	63.2	100
	Non-Music Students	27.6	31.5	40.9	100
	Overall	24.0	29.0	47.0	100
Q17: How good are you in music (not very good-very good).	Music Students	12.6	31.2	56.2	100
	Non-Music Students	35.3	38.2	26.6	100
	Overall	29.1	36.2	34.7	100

Survey Items		Ratings of 1 or 2 (%)	Ratings of 3 (%)	Ratings of 4 or 5 (%)	Overall (%)
Q18: Compared to your other subjects, how good are you in music (my worst subject-my best subject).	Music Students	13.3	32.0	54.7	100
	Non-Music Students	37.4	35.1	27.5	100
	Overall	30.8	34.3	35.0	100
Q19: If you were to arrange all students in your class from best to worst, where would you put yourself for each of these subjects (the worst-the best).	Music Students	14.5	33.7	51.8	100
	Non-Music Students	37.8	38.1	24.2	100
	Overall	31.4	36.9	31.7	100
Q20: How difficult is music for you (very easy-difficult).	Music Students	61.5	28.0	10.5	100
	Non-Music Students	41.2	36.7	22.1	100
	Overall	46.7	34.3	18.9	100
Q21: Compared to your other subjects, how difficult is music for you (my easiest subject-my hardest subject).	Music Students	62.9	28.0	9.1	100
	Non-Music Students	39.5	38.2	22.3	100
	Overall	45.9	35.4	18.7	100
Q22: At school, how difficult is it for you to score high marks in music (very easy-very difficult).	Music Students	59.6	29.5	10.9	100
	Non-Music Students	36.6	37.7	25.8	100
	Overall	42.9	35.4	21.7	100
Q23: At school, how useful is the information you learn in music (not useful-very useful).	Music Students	16.8	30.3	52.9	100
	Non-Music Students	29.2	37.6	33.2	100
	Overall	25.8	35.5	38.7	100
Q24: How useful is leaning music for your everyday life outside school (not useful-very useful).	Music Students	16.6	29.5	53.9	100
	Non-Music Students	29.8	36.6	33.5	100
	Overall	26.2	34.7	39.1	100

Survey Items		Ratings of 1 or 2 (%)	Ratings of 3 (%)	Ratings of 4 or 5 (%)	Overall (%)
Q25: How useful do you think learning music will be for you when you leave school and get a job (not useful-very useful).	Music Students	19.4	26.3	54.3	100
	Non-Music Students	35.6	34.5	29.9	100
	Overall	31.2	32.3	36.6	100
Q26: How well do you expect to do at the end-of-year examination this year in music (very poorly-very well).	Music Students	7.8	30.3	61.9	100
	Non-Music Students	23.4	40.2	36.3	100
	Overall	19.2	37.5	43.3	100
Q27: Compared to other students in your class, how well do you expect to do at the end-of-year examination this year in music (very worse than other subjects-much better than other students).	Music Students	10.1	31.2	58.7	100
	Non-Music Students	27.8	41.0	31.2	100
	Overall	23.0	38.3	38.7	100
Q28: How well do you think you will do in music at the end-of-year examination next year (very poorly-very well).	Music Students	9.3	29.9	60.8	100
	Non-Music Students	25.5	40.9	33.6	100
	Overall	21.1	37.9	41.1	100

AUTHOR'S BIOGRAPHY

Chee Kang Koh was born in Singapore in 1970. He completed a Bachelor of Arts (Music and Chinese Language) with Diploma in Education and Bachelor of Arts in Music with first class honors at the National Institute of Education, Nanyang Technological University in 1997. His honors research was in the area of band conducting and music analysis. He also holds a Licentiate Diploma in Clarinet Performance and Clarinet Teaching from the Trinity College, London. Chee Kang has previously taught band, general music, and Chinese language in the primary and secondary schools in Singapore, and he was also the Chair of Aesthetics Department in his schools. Chee Kang then moved on to the Ministry of Education (MOE) where he obtained the MOE Postgraduate Scholarship to pursue his Master of Music Education at the University of Illinois at Urbana-Champaign (UIUC). Subsequently, during his doctoral studies, Chee Kang received various awards such as the Marilyn Pflederer Zimmerman Doctoral Fellowship, UIUC Conference Travel Award, UIUC Bands Scholarship, and he was also inducted into the Honor Society of Phi Kappa Phi. Chee Kang has presented his research at the MENC biennial national conference, CIC, ICQI, IMEA, MCAA, TMEA in the United States, as well as at international conferences such as ISME and MISTEC. Chee Kang is currently a Senior Music Specialist at the Ministry of Education in Singapore.