Exploring Self-regulatory Behaviors during Music Practice among South Asian Indian American Instrumental Students

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Abstract

This study examined the self-regulatory behaviors of 153 fifth to twelfth grade students' while they practiced music at home. Data were collected using measures on self-efficacy, self-regulation, intrinsic motivation, anxiety, help-seeking, perceived responsibility, academic delay of gratification, and teacher assessment. It was hypothesized that the variables would positively correlate with each other. Second, it was expected that students' practice of music and teacher's rating of the students' music practice would be mediated by self-regulation, intrinsic motivation, delay of gratification, self-efficacy, anxiety, and help seeking. Third, the study examined whether students thought that they were responsible for music practice or their teachers. Results showed that self-regulation was related to music practice, help-seeking, delay of gratification, self-efficacy, and intrinsic motivation. The results of a path analysis showed that self-efficacy had a direct or indirect effect on all the variables and self-regulation had an indirect effect on music practice. A logistic regression analysis indicated that delay of gratification predicted students' perceived responsibility. Students who reported they were responsible for music practice had a higher tendency to delay gratification. The findings suggest that motivational, cognitive, and self-regulatory processes are important in successful music practice.

Keywords: self-regulation, music practice, self-efficacy, elementary to high school students

Introduction

Self-regulated learning is a construct that has developed over the past thirty years (Zimmerman, 2011), and it occurs when students initiate and sustain personal (e. g., cognitive, affective states) and behavioral processes (e.g., self-recording), and manage environmental factors (e. g., practicing music in a quiet place) that influence learning outcomes (Zimmerman & Kitsantas, 2005; Zimmerman, 1998; Zimmerman & Schunk, 2008). Empirical evidence suggests that self-regulated learning is a key factor in academic achievement (Pintrich & DeGroot, 1990; Schunk & Zimmerman, 1998; Winne, 2005), and it plays a major role in learning a musical instrument (McPherson & Renwick, 2011). Although research shows significant correlations between accumulated practice time and music achievement for both expert (Lehmann & Ericsson, 1997) and younger music players (Sloboda & Davidson, 1996), McPherson (2005) states that understanding children's musical progress involves more that merely studying the relationship between their practice time and musical achievement. Learning a musical instrument requires an extensive amount of self-regulatory behaviors such as setting goals, employing effort, monitoring one's performance, and sustaining motivation in challenging tasks (McPherson & Renwick, 2011; Nielsen, 2004).

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According to Zimmerman (1998), self-regulatory behaviors are important during the initial development of music skills and subsequent performance. With this goal in mind, the present study seeks to contribute to the literature by investigating various self-regulatory behaviors South Asian American students engage in during music practice.

Zimmerman (2000) proposes that learners have the capacity to engage in cyclically self-regulated learning wherein they establish standards, set academic goals, regulate their beliefs and motivation, select learning strategies, monitor their academic progress, assess the results of their work, and optimize the physical and social environment. These self-regulatory processes are deployed during forethought, performance, and self-reflection phases (Bandura, 1997; Schunk, 2001; Zimmerman, 2000). There are many components of this cyclical model of self-regulation and below is a brief description of each. A complete and thorough description can be found in Zimmerman and Campillo (2003).

In the forethought phase, two major sources of self-regulation are task analysis and self-motivational beliefs. One key aspect of task analysis is setting goals and another is strategic planning to accomplish those goals. According to Zimmerman (2011), setting goals and implementing strategic planning to achieve them depends on students' motivational beliefs. He outlines four motivational beliefs, namely, self-efficacy, outcome expectancies, task interest, and goal orientation. Self-efficacy refers to individuals' beliefs in their capabilities to learn or perform a task successfully (Bandura, 1997). Outcome expectancies refer to how a task fits into an individual's future plan and it also motivates forethought goal setting and performance phase efforts to learn (Shell, Murphy, & Bruning, 1989). Another component is task interest or intrinsic motivation, which relates to not only people's interest and inherent satisfaction in an activity, but choosing and pursuing it in the performance phase (Zimmerman & Schunk, 2008). Finally, a learning goal orientation enhances self-regulation because students seek to improve their academic competency compared to a performance goal orientation, where they may avoid challenging tasks.

In the performance phase, self-regulated learning processes are grouped as self-control and self-observation (Zimmerman, 2011). Self-control strategies are task strategies, self-instruction, imagery, time management, help-seeking, self-instruction, environmental structuring, self-consequence, and delay of gratification. High self-regulated learners can use task strategies and imagery to learn, whereas, poor self-regulated learners may have difficulty doing so. Students can use a number of these self-control processes to motivate themselves. According to Wolters and Rosenthal (2000), self-consequence involve setting rewarding or non-rewarding consequences for oneself, environmental structuring refers to making the environment more suitable and attractive for task completion, and self-instructions refer to statements that enhance students' learning goal orientation. In addition, delay of gratification refers to students' intentions of postponing immediate rewards until they complete their work (Bembenutty & Karabenick, 2004). Students may also engage in help-seeking, which is a self-regulatory process of choosing teachers

or peers to enhance learning a task (Zimmerman, 1998). The second performance phase processes is self-observation and it refers to metacognitive monitoring or self-recording. Tracking changes in one's learning outcomes can motivate learners to expend more effort until they complete their task.

In the self-reflection phase, two processes are self-judgments and self-reactions. Self-judgments refer to self-evaluating one's achievements and attributing causal inferences to the outcomes. Perceived responsibility refers to students' causal attributions related to learning and successful outcomes (Kitsantas & Zimmerman, 2009). Two forms of self-reactions are self-satisfaction and defensive or adaptive inferences. Self-satisfaction with one's work can enhance motivation to learn. Students who attribute poor outcomes to learning strategy are more likely to make adaptive inferences and modify their approach in subsequent efforts to learn. However, students who are dissatisfied with their performance and attribute it to uncontrollable causes often make defensive inferences such as task avoidance, procrastination, and lack of motivation to continue. Zimmerman (2011) describes the cyclical relationship between motivational and metacognitive components of self-regulation by noting that students' use of cognitive and metacognitive strategies enhance perceptions of self-efficacy, which provide the motivational basis for further self-regulation during learning. Self-reflection phase reactions influence forethought goal setting and motivational beliefs to learn. As students self-regulate their learning, they become independent learners and take responsibility for their learning (Schunk, 2001). Among the many constructs of self-regulated learning, the following study explores South Asian Indian American students' self-efficacy, intrinsic interest, help-seeking, delay of gratification, perceived responsibility, music practice, and self-regulation during music practice. Additional variables that were included are anxiety and teacher assessment of students' music practice. A more detailed account of music research on the subprocesses in each phase can be found in McPherson and Renwick's (2011) article.

Literature Reviews

According to McPherson and Zimmerman (2002), the core of self-regulated musical learning involves social processes, such as modeling or direct reinforcement from competent others that allow children over time to monitor and control their personal learning. Results from several studies suggest that self-regulation processes take time to develop and may be used more often by high achieving or advanced music students compared to novices (Hallam, 2001; Miksza, 2005). In a longitudinal study, McPherson (1997) found that students used a wider range of practice strategies in their third year compared to their first and high-achievers used metacognitive strategies compared to low achievers. In another longitudinal study with seven children between 7 and 9 years of age, McPherson and Renwick (2001) found differences in their self-regulatory processes. Some children practiced for long hours, corrected their errors, and made efforts to improve from the inception of the study. McPherson and Renwick (2001) noted that self-regulatory

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processes such as self-monitoring, setting goals, structuring the learning environment, seeking information from knowledgeable people, and using appropriate strategies take time to develop, but every time young musicians initiate these processes during music practice, they are one step closer to refining these processes that would become second nature.

In a study with 16 adolescent students, Leon-Guerrero (2008) explored the type of self-regulated strategies they used during music practice. The results showed that students a number of self-regulated strategies during practice and repeating a segment of the musical selection was used more frequently compared to strategies involving how to play the musical notes. Nielsen (2001) conducted a case study with two third-year advanced organ students using Zimmerman's (2000) model of self-regulation. The results data indicated that these students set specific goals, initiated strategic planning, used self-instruction, task strategies, and monitored their performance in a very detailed manner, implying that they were very skillful in employing self-regulatory behaviors to optimize their learning and performance.

Research evidence suggests that self-regulatory strategies predict music achievement. In two studies by McCormick and McPherson (2003) with 332 instrumentalists between ages 9-18, and McPherson and McCormick (2006) with 686 students between ages 9-19, the results showed significant relationships between self-report measures of cognitive strategy use, self-regulation, self-efficacy, and graded exams on music performance. In both studies, self-efficacy was the best predictor of music performance and practice time was indirectly related to performance, implying that while practice is important in successful performance, motivational variables are also important.

In another study, Nielsen (2004) examined the role of strategies and self-efficacy beliefs of 130 first-year advanced music students ranging from 18 to 43 years. Students participated in instrumental and vocal music practice. The results showed that students applied a range of cognitive, metacognitive, and management strategies during music practice such as, setting aside time to practice music, organizing the study environment, and setting goals. Students who perceived themselves capable of learning or performing a music task were more cognitively and metacognitively engaged compared to those who doubted their capability.

Although anxiety is not a subprocess in Zimmerman and Campillo's model, it was a meaningful variable to include in this study. Researchers have also found that students with high self-efficacy engage in more challenging tasks, persist more, and express lower levels of anxiety compared to those with low self-efficacy (Bandura, 1986; Zimmerman, 2000). Studies on professional and classical musicians indicate that performance anxiety is one of the most frequently reported problem (Williamson & Thompson, 2006), it influences the quality of a musician's performance (Dews & Williams, 1989; Wesner, Noyes, & Davis, 1990), and it is related to the fear of humiliation, tension, unrealistic expectations, and pessimistic self-talk (Wilson & Roland, 2002).

In addition, a number of studies indicate that females are sensitive to music performance anxiety across all age groups (Kenny & Osborne, 2006; Wesner et al., 1990). Anxiety refers to the experience of worrisome apprehensions during music performance, which could impair the music performance (Salmon, 1990). Researchers have assessed anxiety using somatic (e. g., "before I perform, I get butterflies in my stomach), cognitive (e. g., I often worry about my ability to perform"), and behavioral (e. g., "I would rather play alone than in front of other people") characteristics of anxiety (Kenny & Osborne, 2006).

An intervention to reduce music performance anxiety and enhance music performance by Hoffman and Hanrahan (2012) revealed that the treatment group experienced a significant reduction in self-reported anxiety immediately after the study, one month later, and a significant improvement in music performance compared to the control group. McPherson and Thompson (1998) observed that it is important for music educators and judges to consider the music performer's thought processes, which are cognitive mediational processes that affect a performer's perception of the task immediately before and during performance, for example, the level of anxiety and self-efficacy beliefs.

Intrinsic interest or motivation is another important component of Zimmerman and Campillo's (2003) model. Research studies have documented that intrinsically motivated students have higher academic achievement (Areepattamannil & Freeman, 2008), less academic anxiety (Gottfried, 1990), greater persistence (Vansteenkiste, Lens, & Deci, 2006), and spend more time practicing and performing music (Driscoll, 2009; McPherson & McCormick, 2000; Schmidt, 2005). Secondary instrumental students and undergraduate education majors are more likely to endorse intrinsic motivation over extrinsic motivation (Schmidt, 2005; Schmidt, Zdzinski, & Ballard, 2006).

In a study involving 24 high achieving school children from Hong Kong, Leung and McPherson (2011) found that most of the students started learning music and were interested in it before entering primary school. When facing challenges, they were optimistic about overcoming them. They had positive environmental support from parents, teachers, and peers. Students reported that they valued music more than other school subjects and had positive expectations about their future music career, implying that they had strong intrinsic motivation.

In another study, Diaz (2010) surveyed 169 undergraduate and graduate students who played in band and orchestra ensembles at three universities. He found that these musicians considered intrinsic factors to be more motivating for success in musical activities compared to extrinsic factors. Likewise with 456 students from grades 6-12, Schmidt (2007) found significant correlations among self-efficacy and commitment to band, and intrinsic-mastery motivation. Intrinsic mastery-orientation was seen as an important factor in the motivation of instrumental music students.

Miksza (2005) examined the dimensions of self-regulation and motivation in the music practice of 175 junior high school band students. Students completed a questionnaire designed to measure intrinsic motivation, attributions of success and

failure, self-regulation, metacognition, and concentration regarding music practice and self-beliefs. Factor analysis showed that five factors accounted for 48% of the total variance, namely, concentration, intrinsic goal-motivation, intrinsic-challenge motivation, metacognition, and commitment to improve.

Most of the studies in music on motivation and self-beliefs have been conducted with students in western countries. Studies on self-efficacy and motivation with South Asian Indian students have been conducted in other domains. In a study with 355 Indian Canadian students in Canada, and 363 Indian students from India, Areepattamannil, Freeman, and Klinger (2011) examined the relation between students' intrinsic, extrinsic motivation, and academic achievement. They found that Canadian Indian students had higher intrinsic motivation and academic achievement compared to their counterparts in India who had higher extrinsic motivation. Klassen (2004) examined the self-efficacy beliefs of 270 seventh grade South Asian Indian and Anglo Canadian students. He found that self-efficacy predicted math performance for both groups; however, the source of the students' self-efficacy beliefs was different. A recent study by Ghazali and McPherson (2009) examined Malaysian children's attitudes towards learning music. Among the five ethnic groups in the study, they found that Chinese and Indian students were more motivated to study music than the other groups and girls were generally more motivated than boys. Moreover, Chinese and Indian students were more inclined to delay gratification, that is, forego other leisure activities to enhance their musical learning.

Another self-regulatory construct related to academic achievement is perceived responsibility, which refers to students' attributions regarding their learning processes and outcomes (Kitsantas & Zimmerman, 2009). Research on the development of perceived responsibility is relatively new and we are not aware of any studies on this variable in music. However, its importance is implied in the music literature. For instance, Nielsen (2004) invites instrumental teachers in higher music education to bear responsibility on increasing their students' competence and confidence while they are learning.

Faulkner, Davidson, and McPherson (2010) report several decision trees that emerged from mining for knowledge in datasets constructed from the musical journeys, experiences and abilities of 157 young people in Australia for 12 years beginning from the outset of instrumental tuition in primary school. They discussed the findings in relation to self-regulation and motivation theories. One of their conclusions was that self-motivation and regulation should not be confused with regular practice times. Students' negotiation of practice without a daily practice time-slot implies that they are capable of taking responsibility for learning music in self-regulated but flexible ways, and not by obligation or external enticements, which may negatively influence their practice and learning.

Jørgensen (2000) raised the question about who is responsible for the learning outcomes for a student in higher instrumental education. He states that students are responsible for their music practice, but instructors are also responsible for students' learning. According to Jørgensen (2000) learning does not

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take place in lessons only, but advanced music students learn a lot in individual practice sessions.

Help-seeking is a subprocess in the performance phase and research shows that help-seeking is an important self-regulated learning strategy that can improve learning and performance (Karabenick, 2011; Karabenick & Newman, 2010). Zimmerman (1998) notes that help-seeking is an important self-regulatory strategy used by professional musicians. He observed that Janina Fialkowska, a professional piano player, preferred Arthur Rubinstein as a coach because she could seek help whenever necessary to master a musical piece. Rubinstein would model to her how the piece could be played.

According to Zimmerman (2008), struggling learners are often reluctant to seek help because it may expose their limitations, whereas, students with positive motivational beliefs seek help because they are confident it will enhance their learning. In addition, students with higher self-efficacy and less test anxiety are more likely to seek help when necessary (Karabenick, 2011). Nielsen (2004) examined the association between help seeking and use of learning strategies among first-year music students in church music, and performance or music education programs at six Norwegian institutions of higher music education. She found that help seeking was positively related to use of cognitive strategies (e. g., elaboration and organization), self-regulatory strategies (e.g., time management), and self-efficacy for learning music. Zimmerman (2001) and Wigfield, Klauda, and Cambria (2011) have placed learners' ability to delay gratification in the performance phase of the self-regulation cyclical model. To study this construct in academic settings, researchers (Bembenutty, 2009; Bembenutty & Karabenick, 2004) have coined the term, academic delay of gratification (ADOG), which refers to delaying immediate rewards in favor of pursuing academic goals that are temporally remote, but ultimately more valuable. Research with college students shows that ADOG is positively related to self-efficacy, intrinsic motivation, help-seeking, time management, and academic achievement (Bembenutty, 2009).

Recent studies (Zhang & Maruno, 2010; Zhang, Karabenick, Maruno, & Lauermann, 2011) examined the relation of academic delay of gratification, motivation, and self-regulated learning among Chinese elementary grade students. The results revealed a positive correlation between academic delay of gratification, motivation, and self-regulated learning.

Strickland (2010) observed that "the instrumental music classroom experience is one where the delay of gratification is commonplace" (p. 7). She posited that students' learning of music over extended periods of time required extensive preparation, personal discipline, and patience that may be closely related to delay of gratification. Initially, when students commence learning a musical instrument, they have to delay gratification for significant events and spend their time learning basic habits and skills of performance, for example instrument assembly, posture, music reading, fingerings, and hand placement (Strickland, 2010). However, delay of gratification has not been fully integrated in research examining mastery of musical skills.

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The primary purpose of the present study was to examine self-reported data on the relationships among self-regulation, intrinsic motivation, delay of gratification, self-efficacy, music anxiety, help seeking, and music instructors' rating of the students' preparation and students' music practice. The second purpose was to determine whether students' motivational beliefs, practice of music, and teacher's rating of their practice are mediated by self-regulation, delay of gratification, perceived responsibility, help-seeking, and music anxiety. From a social cognitive perspective (Schunk & Zimmerman, 1994; 1998), it is expected that self-regulated learning strategies would mediate the association between delay of gratification, self-efficacy level, intrinsic motivation, music practice, and instructor's evaluations. The third goal was to decipher what characteristics of music students are useful for predicting' their perception of themselves or the teacher as more responsible for motivation, and self-regulated behaviors during music practice. Finally, we conducted analyses to see if there are developmental differences in how students report their use of self-regulatory behaviors.

The current study contributes to the literature on music and self-regulated learning in three ways: (1) The sample of South Asian American students would provide a cultural dimension on music practice and report of self-regulatory behaviors; (2) extending the range of self-regulatory behaviors by adding scales such as perceived responsibility, and academic of gratification; and (3) exploring whether age difference exists between younger and older students' report of self-regulatory behaviors during music practice.

Method

Participants

The participants were76 females (49.7%) and 77 males (50.3 %) (n = 153) who take music lessons in the evening hours at a private music school in a suburban town in New York City, United States of America. During the day, they attend regular schools in their neighborhood. Approximately 350 students attend this school and classes are held on Monday to Friday from 4 p.m. to 9 p.m. and on Saturdays from 9 a.m. to 5 p.m. The age of the students ranged from 10 to18 years (M = 13.42; SD = 2.43). In the elementary grades 5 and 6, there were 25 students respectively (n = 50), in the middle school grades 7 and 8, there were 23 and 19 (n = 42), and the high school grades from 9 to 12 had17, 11, 14, and 19 students respectively (n = 61). These students were born in America to Indian parents with an ancestral heritage from India and English is their first language. Their religious identity is Hindu and racial ethnicity is Indian American. Students are placed in four levels at this school, namely, elementary, basic, intermediate, and advanced. Students are placed at the elementary level when they join the music academy and remain at this level for one year wherein they must be able to play at least 10 songs on the music instrument of choice they aim to master. At the end of the year, there is an examination at each level and successful students receive a passing certificate

and progress to the next level. Students are given homework every week and are expected to practice their musical piece or song at home. Before each class, the instructors evaluate each student's homework to determine whether students have mastered the prior homework or are having difficulty. In this study, based on the discussion with the Institutional Review Board, we excluded participants below fifth grade because completing the survey demanded reading skills at fourth grade level and above. As a result, students at the elementary music level were not included in this study. There were 61 (39.9%) at the basic level, 68 (44.4%) at the intermediate level, and 24 (15.7%) at the advanced level.

The musical instruments ranged from percussion (e. g., tabla), string (e.g., sitar, violin, sarangi), wind (e. g., flute), and keyboard (e. g., harmonium). There were 109 students who played harmonium, 57 played tabla, 17 played sitar, 10 played violin, three played sarangi, and two played flute. Most students played one instrument (n = 115), some played two instruments (n = 31), and a few played three instruments (n = 7).

There are five teachers in the school, two females and three males and each has more than five years of teaching experience in Indian classical music. The class size ranges from groups of five to 10 students. The instructional approach is based on modeling, practice, and feedback. Participation was voluntary. This study was approved by the Institutional Review Board. The researcher contacted the school's principal and teachers and told them of the study. Flyers were posted in the school and parental permission and student consent forms were signed by participating students before the study.

Measures

Help-seeking. To assess formal help seeking, a six-item scale was adapted from Karabenick and Knapp (1991) (M = 2.36; SD = .96). We assessed the frequency with which students seek help from their parents, siblings, peers, or teachers using a scale 1 (*never*) to 7 (*always*).An example is, "How often do you seek help from your music instructor to complete your music homework?" The Cronbach's alpha reliability coefficient was .61.

Academic delay of gratification. A ten-item scale was adapted for this study from Bembenutty (2010). The scale examined students' delay of gratification in relation to their music homework. They rated their preference for an immediate attractive option versus a delayed alternative, which was scored with a continuous scale ranging from 1 (*Definitely choose A*) to 4 (*Definitely choose B*). For example, "Which of the following would you choose to do? A. Spending time with your friends and then practice your music homework, or B. Postpone spending time with your friends until after you have practice your music homework" (M = 2.97; SD = .65). The alpha reliability coefficient for this scale was .81.

Teacher assessment of music performance. A two-item scale was used to measure teacher's rating of the students' performance in music class and homework preparation by using a scale from 1 (*extremely poor*) to 10 (*extremely well*). The first item was, "Please indicate how the above student performs in classroom." The second item was, "Please indicate how often this student comes to class with his/her homework assignment or homework practice done." This scale ranged from 1 (*extremely unprepared*) to 10 (*extremely prepared*). The Cronbach's alpha was .85.

Self-efficacy beliefs for learning music. A four-item scale was adapted for this study to assess self-efficacy beliefs for doing music homework (Bembenutty, 2010). For example, "I am sure that I can complete my music homework." This scale ranged from 1 (*strongly disagree* to 7 (*strongly agree*), M = 6.28; SD = .81. The reliability coefficient was .77.

Intrinsic motivation for learning music. Intrinsic motivation was assessed with a five-item scale adapted from Bembenutty (2010). An example is, "I enjoy doing challenging music homework assignment." This scale ranged from 1 (*strongly disagree*) to 7 (*strongly agree*), M = 4.84; SD = 1.31. The alpha reliability coefficient for this scale was .82.

Self-regulation of learning music.This ten-item scale was adapted from Bembenutty (2010). For example, "I have a quiet place to complete my music homework." This scale ranged from 1 (*strongly disagree*) to 7 (*strongly agree*), M = 5.11; SD = 1.22. The reliability coefficient was .81.

Time spent practicing music. The amount of time students spent practicing music was obtained by 1-item scale. "How many hours per day do you usually spend practicing music?" (M = 1.02; SD = 1.00). The 1-item format in relation to homework follows Cooper and associates (Cooper, Jackson, Nye, & Lindsay, 2001; Cooper, Valentine, Nye, & Lindsay, 1999).

Frequency of music practice. The frequency of doing music homework was assessed by students' responses to the following question: "How often do you do music homework?" (Cooper et al., 2001; Cooper et al., 1999), (M = 5.55; SD = 6.00).

Music anxiety. It was assessed with a three-item scale (M = 2.92; SD = 1.41). It was adapted from Kenny and Osborne (2006) and measured cognitive (e.g., "How often do you worry when you practice music?") and behavioral (e.g., "How often do you worry when you practice music in front of your peers?") characteristics of anxiety. The scale ranged from 1 (*never*) to 7 (*always)*. The alpha reliability coefficient for this scale was .72.

Perceived responsibility for learning music. It was assessed with an 18-item scale adapted from Kitsantas and Zimmerman (2009).Students rated the extent to

which they believe that learning music and practicing is their responsibility or the instructor's responsibility. Based on Kitsantas and Zimmerman's work, Magno (2011) constructed a perceived responsibility scale with consistent findings. An example is, "who is more responsible for not finishing music homework assignments?" Students answered using the following seven-point scale: 1 (*mainly the teacher*), 2 (*definitely more the teacher*), 3 (*slightly more the teacher*), 4 (*both equally*), 5 (*slightly more the student*), 6 (*definitely more the student*), and 7 (*mainly the student*). The Cronbach's alpha was .84.

Procedure

The first author administered the questionnaires to students in groups of five or six in a room at the music school. At the beginning, the research read the following sentences from students' assent form. "This study aims to find out how you practice music. For example, do you set goals, motivate yourself, and manage your time while practicing music." Students were provided with a pencil, assent form, and the four-page stapled questionnaire. Students read their assent forms briefly and signed them. This was done outside of students' class time with the teachers' and parents' permission. Students were informed that their participation was voluntary and can withdraw from the study at any time. All the students who consented participated fully in the study. The reading level for the survey items was at 6.8 grade level based on a calculation in Microsoft word. All students were told to ask for help if they had difficulty in completing the survey. Moreover, to facilitate younger students' comprehension, the first author told them to ask for help if they did not understand the meaning of any word or sentences on the survey. Some of the younger students who had difficulty with a few words received help. The survey items were stapled on four sheets of single-sided papers. The first part of the survey collected demographic data such as age, grade level, music level, and gender. Before each scale, there were clear instructions on how to respond to each item. The same questionnaire was administered to students from grade 5 to grade 12. Students also indicated their teachers' names. At the end of the student session, the researcher gave the respective teacher the survey items to complete for each student. Each student was given a code to guarantee anonymity. Students completed the survey in approximately 15 to 20 minutes. At the end of each session, the researcher checked through to make sure students completed all the items and thanked each student for participation.

Results

Pearson correlation coefficients were calculated to assess the direction and magnitude of the linear relationship between students' motivation, use of learning strategies, gender, and instructor rating of their music performance. ANOVA, MANOVA, Regression analysis, cluster analysis, and logistic regression were conducted to examine the association between the variables. Factor analyses were

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conducted to identify latent variables from the correlations between observed variables (see Table 1). Path analyses were conducted to examine the goodness of fit of the predicted model about the hypothesized relations between the observed variables in the study.

We used multilevel regression modeling to assess whether the instructor's rating of students' homework preparation and performance varied across students' level of music skills (i.e., basic, intermediate, and advanced). As suggested by the intraclass correlation [ICC = .241/(.241+1.900) = .112], and because the intercept did not vary significantly across music skill levels (Wald Z - .81, p = .418), the development of a multilevel model is not warranted. However, there was significance variance to be explained within music students (Wald Z = 8.65, p = .000). As a result, we examined music students' differences with regard to their music level of preparation. Students reported their level as basic, intermediate, and advanced. A MANOVA with music level as a independent factor and the other variables as dependent variables indicated no significant main effect, Wilks' Lambda, Λ = .84, F = 1.26, p> .05; η_p^2 = .08.

Another MANOVA was conducted to assess gender effect on the other variables. Wilks' Lambda statistic revealed a significant main effect of gender, Λ = .88, F = 2.07, p< .05; η_p^2 = .11. ANOVA analysis on the dependent variables indicated a significant gender difference on music anxiety. Females (M = 3.18, SD = 1.49) reported higher music anxiety level than males students (M = 2.64, SD = 1.28), but with a small effect size, η_p^2 = .03.

To examine the effect of academic level (elementary, middle, and high school) of the students on other variables, MANOVA with academic level as an independent factor and the other variables as dependent variables, showed no significant main effect Wilks' Lambda, Λ = .81, F = 1.55, p> .05; η_p^2 = .10.

Table 1
Rotated Factors Loadings of Perceived Responsibility for Music Homework Practice

	Item	*M*	*SD*	Factor loadings **1**	2	3	h^2
	Who is more responsible for me…						
	Factor 1: Perceived Responsibility for Behavior						
1.	not finishing music homework assignments?	6.58	.98	**.83**	.14	.00	.71
2.	fooling around during music homework practice?	6.58	1.09	**.80**	-.05	.11	.65
3.	doing music homework assignments without trying hard?	6.27	1.32	**.78**	.30	.14	.71
4.	not writing music homework assignments?	6.42	1.30	**.75**	-.09	.23	.63
5.	being unprepared to participate in class?	6.44	1.16	**.72**	.34	.06	.64
6.	being unprepared for music homework?	6.50	1.14	**.68**	.04	.10	.47
7.	not valuing music homework assignment?	6.35	1.26	**.64**	.05	.11	.42
8.	not concentrating during music homework assignment?	6.27	1.40	**.63**	.48	-.04	.62
	Factor 2: Perceived Responsibility for Motivation						
9.	remembering information from the music homework?	5.92	1.48	.23	**.73**	-.02	.58
10.	being interested in doing music homework assignments?	5.42	1.66	-.03	**.63**	.36	.53
11.	making extra effort to complete music assignment?	6.41	1.10	.28	**.59**	.01	.43
12.	being motivated to practice music at home?	5.08	1.64	-.13	**.54**	.22	.36
13.	rehearsing music homework assignment?	5.88	1.66	.16	**.52**	.22	.34
	Factor 3: Perceived Responsibility for Cognition						
14.	not understanding music homework instructions?	4.34	1.66	.13	-.03	**.72**	.54
15.	not practicing music homework assignments correctly?	5.45	1.57	.45	.10	**.63**	.61
16.	understanding assigned music homework?	4.33	1.66	-.18	.39	**.56**	.50
17.	receiving poor feedback for my music assignment?	5.16	1.89	.27	.13	**.52**	.35
18.	believing music homework is important to my future?	5.64	1.46	.03	.18	**.47**	.26
	Eigenvalue	----	----	5.69	2.29	1.37	----
	% of Variance	----	----	31.60	12.71	7.63	----
	Cumulative %	----	----	31.60	44.30	51.93	----
	Factor Correlations						
	Factor 1	6.47	.71	----			----
	Factor 2	5.73	.98	.41**	----		----
	Factor 3	5.00	1.00	.40**	.42**	----	----

Note. h^2 = communality. Boldface indicates highest factor loadings. Students answered using the following seven-point scale: 1 (mainly the teacher), 2 (definitely more the teacher), 3 (slightly more the teacher), 4 (both equally), 5 (slightly more the student), 6 (definitely more the student), and 7 (mainly the student).

Research Objective 1: Correlations between the Variables

Table 2 presents means, standard deviations, Cronbach alphas, and Pearson correlation coefficients among the variables of the study. Frequency of doing music assignments was related to hours practicing music(r = .22, p< .01), delay of gratification (r = .34, p< .01), self-efficacy (r = .21, p< .01), intrinsic motivation (r = .37, p< .01), and self-regulation(r = .38, p< .01). Hours practicing music was related to frequency of practicing music, help seeking (r = .26, p< .01), delay of gratification (r = .27, p< .01), intrinsic motivation (r = .41, p< .01), and self-regulation (r = .30, p< .01). These results suggest that students who reported high frequency of music practice used self-regulated learning strategies, were highly willing to delay

gratification, highly self-efficacious, and had high intrinsic interest for practicing music.

Self-regulation was related to musicpractice, help seeking (r = .21, p< .01), delay of gratification (r = .35, p< .01), self-efficacy (r = .40, p< .01), and intrinsic motivation (r = .57, p< .01). These findings are consistent with previous studies among non-music middle school children (Pintrich & DeGroot, 1990) and non-music college students (Bembenutty, 2009). Self-efficacy was related to delay of gratification, music homework, intrinsic motivation (r = .47, p< .01) and self-regulation (r = .40, p< .01).

Consistent with previous work on non-music students (Pintrich & DeGroot, 1990), music anxiety was inversely related to self-efficacy beliefs (r = -.17, p< .05) and self-regulation (r = -.22, p< .01). However, music anxiety was positively related to help seeking (r = .24, p< .01) and females reported higher music anxiety than males; r = .19, p< .05). More anxious students reported a low level of self-efficacy to master the material for their music practiceand were less capable to motivate themselves. One reason may be that females sought less help from knowledgeable parents, siblings, tutors or music instructors than males.Unexpectedly, the instructors' assessments ofstudents'musicpractice was unrelated to the other variables in the study. Similarly, students' perceived responsibility only correlated with intrinsic motivation (r = .16, p< .05).

Table 2
Means, Standard deviations, Cronbach Alphas, and Intercorrelations for Variables

	1	2	3	4	5	6	7	8	9	10	11
1.	Gender	1									
2.	Teacher Assessment	.13	1								
3.	Practicing music	.03	.04	1							
4.	Music Homework	.08	.02	.22**	1						
5.	Help seeking	.10	-.02	.26**	.10	1					
6.	Music anxiety	.19*	-.15	.05	-.10	.24**	1				
7.	Delay of gratification	.11	.00	.27**	.34**	.01	-.13	1			
8.	Perceivd responsibility	.07	-.03	-.00	.09	-.08	-.08	.12	1		
9.	Self-efficacy	.00	.09	.05	.21**	-.03	-.17*	.27**	.14	1	
10.	Intrinsic motivation	.05	.00	.41**	.37**	.15	-.14	.39**	.16*	.47**	1
11.	Self-regulation	.14	.11	.30**	.38**	.21**	-.22**	.35**	.16	.40**	.57**	1
	Mean	----	7.48	1.02	5.50	2.36	2.92	2.97	5.84	6.28	4.84	5.11
	Standard Deviation	----	1.42	.58	1.33	.96	1.41	.66	.74	.81	1.31	1.22
	Cronbach Alpha	----	.85	----	-----	.61	.72	.81	.84	.77	.82	.81

Note. * p< .05, ** p< .01

Research Objective 2: Path Analysis

The proposed model was evaluated using LISREL-8.80 (Jöreskog & Sörbom, 2004). The following fit indexes were used: Chi-square/*df*, Non-Normed Fit Index (NNFI), Root Mean Square Error of Approximation (RMSEA), Incremental Fit Index (IFI), Goodness of Fit Index (GFI), and Comparative Fit Index (CFI). A good of fit was indicated by a Chi-square/*df* equal or less than 25, NNFI, IFI, GFI, and CGI greater than .90, and a low RMSEA (Bentler & Bonett, 1980; Byrne, 1998; Steiger, 1990)

Estimation of the proposed path model (See Figure 1) revealed a significant χ^2 (18, N = 153) = 30.37, p = .034, NNFI = .58, IFI = .79, GFI = .88, RMSEA = .06, and CFI = .78. The indices showed that the predicted model did not provide an optimal goodness of fit (see Table 3). Eleven of the paths were non-significant. Following the modification recommendations and theoretical background, Figure 2 shows the results of the final path model. The final model fits the data well with a significant χ^2 value, χ^2 (10, N = 153) = 7.61, p = .667, RMSEA = 0.000; NNFI = .96, IFI = 1.01, GFI = .99, and CFI = 1.01. Given the substantial theoretical evidence of the association between motivational beliefs, self-regulation, and music performance (McPherson & Renwick, 2011; Nielsen, 2001; Zimmerman, 1998), and the estimated standardized path-coefficient, the model was retained as the final model.

Table 3
Goodness of Fit Indexes of the Proposed and Final Model

	Goodness of Fit Indexes						
Model	χ^2 (*df*)	*p*	NNFI	IFI	GFI	RMSEA	CFI
Predicted Model	30.37 (18)	.03	.58	.79	.88	.06	.78
Final Model	7.61 (10)	.66	.96	1.01	.99	.00	1.01

Note. NNFI, Non-Normed Fit Index; IFI, Incremental Fit Index; GFI, Goodness of Fit Index; CFI, Comparative Fit Index; RMSEA, Root Mean Square Error of Approximation.

Figure 2 presents the paths (standardized coefficients with correlations in parentheses) resulting from the LISREL analysis. As expected, students' self-efficacy beliefs had a direct effect on delay of gratification (β = .21) and self-regulation for learning music (β = .40). Willingness to delay gratification had a direct effect on hours of music practice (β = .21). Self-regulation had a direct and negative effect on music anxiety (β = -.22), a direct and positive effect on help seeking (β = .28), delay of gratification (β =.18), frequency of doing music assignments(β =.32), and hours of music practice (β = .22). Music anxiety had a positive and direct effect on help seeking (β = .30), which in turn had a positive effect on hours of music practice (β = .22).

The final model differed from the proposed model by the absence of intrinsic motivation, perceived responsibility, and instructors' evaluations of the students' music preparation and practice. Table 4 describes the decomposition effects from

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the path analysis. Figure 2 shows that self-regulation and self-efficacy accounted for 10% of the variance in delay of gratification and 17% of the variance in music anxiety. Self-efficacy, self-regulation, and music anxiety accounted for 11% of the variance in help seeking. All these variables accounted for 18% of the variance in hours of music practice while self-efficacy and delay of gratification accounted for 21% of the variance in frequency of practicing music.

Table 4
Decomposition of Effects from the Path Analysis

Effect	Standardized estimate (β)	Standard error (*SE*)	*t*	R^2
On Hours Practicing Music				.18
of delay of gratification	.21	.08	2.77	
of self-regulation	.32	.08	2.68	
of help seeking	.22	.08	2.95	
On Music Homework				.21
of delay of gratification	.26	.07	3.42	
….of self-regulation	.32	.07	4.33	
On Help Seeking				.11
….of self-regulation	.28	.08	3.55	
of music anxiety	.30	.08	3.87	
On Music Anxiety				.17
….of self-regulation	-.22	.08	-2.77	
On Self-regulation				.16
….of self-efficacy	.40	.07	5.36	
On Delay of Gratification				.10
…. of self-regulation	.18	.08	2.10	
…. of self-efficacy	.21	.08	2.49	

Note. All the effects are statistically significant at the $p < .05$.

Table 5 displays the decomposition of direct, indirect, and total effects on the endogenous variables. Self-efficacy had a significant direct or indirect effect on all the variables. Self-regulation has a significant and indirect effect on hours of music practice (Indirect effect = .08, $p < .05$), but not on frequency of practicing music (Indirect effect = .05, $p > .05$). Music anxiety had a significant indirect effect on hours of music practice (Indirect effect = .07, $p < .05$). The only non-significant indirect effect was between self-regulation and frequency of doing music homework, $t = 1.79$, $p > .05$.

Table 5
Direct, Indirect, and Total Effects on the Endogenous Variables

Effect	Direct Effect	Indirect Effect	Total Effect
On Hours Practicing Music			
of delay of gratification	.21	.00	.21
of self-regulation	.21	.08	.29
of help seeking	.22	.00	.22
….of music anxiety	.00	.07	.07
of self-efficacy	.00	.16	.16
On Music Homework			
of delay of gratification	.26	.00	.26
of self-regulation	.32	.05 [a]	.37
of self-efficacy	.00	.20	.20
On Help Seeking			
….of self-regulation	.28	-.07	.21
of music anxiety	.30	.00	.30
of self-efficacy	.00	.08	.08
On Music Anxiety			
….of self-regulation	-.22	.00	-.22
of self-efficacy	.00	-.09	-.09
On Self-regulation			
….of self-efficacy	.40	.00	.40
On Delay of Gratification			
….of self-regulation	.18	.00	.18
….of self-efficacy	.21	.07	.28

Objective 3: Predicting Perceived Responsibility

In light of the surprising finding that perceived responsibility had a significant, but weak association with intrinsic motivation ($r = .16$, $p < .05$), further examination on the function of perceived responsibility was conducted. Cluster analysis was used to classify students based on their reported degree of responsibility attributed to them or to the teacher regarding music learning, motivation, and music practice.

A cluster analysis was performed to determine the similarities, group membership, and structure in data of the music students in relation to their perceived responsibility. A K-mean generated a non-interpretable three-cluster solution with one cluster involving only two members. However, a two-cluster solution was highly interpretable. The cluster analysis produced an estimate of within-students similarity and dissimilarity according to their perceived responsibility. Cluster 1 (labeled teacher primarily responsible; $n = 42$) consisted of students who perceived that teachers were primarily responsible for their music behavior, motivation, and use of cognitive strategies. These three types of perceived responsibility are derived from prior research (Magno, 2011; Zimmerman & Kitsantas, 2005), and confirmed in our factor analysis (see Table 1). Cluster 2 (labeled student primarily responsible; $n = 111$) consisted of students who perceived that they were primarily responsible for their learning tasks and outcomes, which was confirmed with a MANOVA. Using Wilks' Lambda statistic, there was a

significant effect of cluster on the students' perceptions of responsibility, $\Lambda = .35$, $F = 91.30$, $p < .001$; $\eta_p^2 = .64$ (see Table 6).

A MANOVA was followed by a series of ANOVAs, one per dependent variable (see Table 6) to test the differences between the two clusters regarding students' motivation, music anxiety, self-regulation, gender, and instructor's assessment. The MANOVA was not significant $\Lambda = .91$, $F = .12$, $p > .05$; $\eta_p^2 = .08$. Subsequent ANOVAs suggested that academic delay of gratification for learning music was the only variable that was significantly associated with perceived responsibility $F(1, 151) = 5.25$, $p < .05$, $\eta_p^2 = .03$.

Table 6
Mean Scores on Measures of Perceived Responsibility for Learning Music as a Function of Two Cluster Solutions

	Perceived Responsibility					
	Student Primarily Responsible Cluster 1 $n = 42$		Music Teacher Primarily Responsible Cluster 2 $n = 111$			
	M	*SD*	*M*	*SD*	*F*	η_p^2
Perceived Responsibility of Behavior for Learning Music	5.82	.95	6.71	.37	69.91	.32
Perceived Responsibility of Music Motivation for Learning Music	4.67	.94	6.14	.63	122.53	.44
Perceived Responsibility for Using Cognitive Strategies to Learn Music	3.96	.70	5.40	.79	105.83	.41

Note. Wilks' Lambda = .35, $F = 91.30$, $p < .001$, Partial Eta Squared = .64.

To examine further how delay of gratification differentiated these two groups of music students, a binary logistic regression was computed because we have a nominal dependent variable. The logistic regression had two clusters as the outcome variable (Cluster 1 coded 0, and cluster 2 coded 1) with delay of gratification and gender as the independent variables in two steps. Gender was included to control for its potential effect (see Table 7).

Delay of gratification significantly predicted cluster classification. A test of the full model with the two independent variables against a constant only model was statistically significant, $\chi^2(1, N = 153) = 12.99$, $p < .001$). However, adding gender without delay of gratification did not significantly predict cluster classification, -2LL = 178.14 (179.98 – 178.14 = 1.84; $\chi^2(1, N = 153) = 1.96$, $p > .05$), which suggested that delay of gratification was a sufficient predictor (-2LL = 173.41 (178.14 – 173.41 = 4.73; $\chi^2(1, N = 153) = 6.41$, $p < .05$). The reduction of the -2LL suggests that by adding delay of gratification, perceived responsibility was predicted more accurately than by the constant and gender. The amount of variance explained by the two predictors as indicated by Pseudo R-square Hosmer and Lemeshow's measure of R_L^2 was low (.11) with 95% confidence interval. Table 7

shows the regression coefficients, Wald statistics, odd ratios, and 95% confidence intervals for odds rations for each of the predictors.

Table 7
Summary of Logistic Regression Analysis Predicting Differences on Perceived Responsibility

				Wald			95% CI		
		B	*SE*	statistic	*p*	*OR*	Lower	Upper	-2LL
Step 0	Constant	.972	.181	28.780	000	2.643			179.98
Step 1[a]	Gender	.512	.367	1.941	.164	1.669	.812	3.428	178.14
Step 2	Gender	.431	.375	1.326	.250	1.539	.739	3.207	173.41
	Delay of gratification	.596	.286	4.342	.037	1.815	1.036	3.178	

Note. Gender (males are code 0, females are coded 1). CI = confidence interval for odds ratio (OR). -2LL = Likelihood Ratio Tests

Classification of cluster membership was marginal, with 2.4% of the students who perceived that the music instructors were primarily responsible (41 students actually believing they were mainly responsible and 1 student correctly classified), and 98.2% of the students who perceived that they were mainly responsible (109 students actually believing they were mainly responsible and 2 students misclassified). With the initial model (Step 0) predicting that 100% of the students will perceive that they were mainly responsible rather than the teacher, in Step 2, we found that the overall success rate of predicting the students' beliefs was actually 71.9% of the 153 music students. An examination of Wald statistics suggests that academic delay of gratification was the only significant predictor of cluster membership $\chi^2(1, N = 153) = 4.34, p < .05$). It distinguished music students who perceived that they are more responsible for learning music compared to those who perceive their instructors are more responsible.

Discussion

In this study, we investigated various self-regulatory processes in the context of music practice. The results highlight the significant role that self-efficacy plays in learning and practicing music assignments. Consistent with Bandura (1997), these findings support the contention that a sense of agency is associated with positive music outcomes and self-efficacy had a significant direct or indirect effect on all the variables in the study.

The first research objective of this study was to examine the relations among the variables. The results showed that self-regulation was significantly and positively related to hours of music practice, help-seeking, delay of gratification,

self-efficacy, and intrinsic motivation, implying that students who engaged in self-regulatory processes also exerted more effort in music and motivated themselves. The importance of self-regulation has been documented in music education (McPherson & Renwick, 2011). This study supports the view that learning a musical instrument involves a great deal of self-regulatory behaviors and processes (McPherson & Renwick, 2011).

A hallmark of self-regulated learners is that they are able to control their emotions. The results indicated an inverse relation between self-regulation and music anxiety, suggesting that students who engaged in more self-regulatory behaviors experienced less anxiety. However, females reported higher anxiety level compared to males. Research on music anxiety suggest that students do experience music performance anxiety as early as sixth grade (Ryan, 2004), and females tend to report more performance anxiety than males (LeBlanc, Jin, Obert, & Siivola, 1997).

Consistent with Strickland (2010), academic delay of gratification was related to hours of practicing music, frequency of music practice, self-efficacy, intrinsic motivation, and self-regulation. These findings support Strickland's proposition that "the instrumental music classroom experience is one where the delay of gratification is commonplace" (p. 7). Music students reported that they prefer to postpone immediately available opportunities in order to pursue their music goals (Bembenutty & Karabenick, 2004), a finding that is consistent with Mischel and his associates' (Casey et al., 2011; Mischel, 1996). Research evidence suggests that delay of gratification has certain developmental stability through the lifespan and positive behavioral outcomes. In a longitudinal study, children who delayed gratification for a candy at four years, were able to resist temptations, and were academically and socially more successful than children who were unsuccessful in resisting temptation forty years later (Casey et al., 2011). Moreover, the findings indicate that delay of gratification depends on individuals' self-efficacy beliefs and self-regulatory processes.

The second research objective examined whether the associations between self-efficacy beliefs, intrinsic motivation, practice of music, frequency of doing music assignments, and teacher's rating of the students' music practice are mediated by students' self-regulation, delay of gratification, perceived responsibility, help-seeking, and music anxiety. In general, the present study provided substantial support for direct and indirect effects between students' self-efficacy beliefs, use of self-regulated strategies, willingness to delay gratification, help seeking for learning music, music anxiety, and frequency of music practice. These results suggest that students' motivational beliefs and self-regulatory behaviors contributed significantly to successful music practice.

Students' self-regulation of learning directly affected their willingness to delay gratification, help seeking, and completing music practice. The present results support the premise that self-regulation of learning impacts music practice (McPherson & Renwick, 2011). However, highly anxious music students reported using less self-regulated learning strategies than less anxious students. Students'

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willingness to delay gratification had a direct effect on hours of music practice, suggesting that students were willing to sacrifice immediate gratification and spend quality hours practicing music. However, delay of gratification did not have an effect on help seeking, but help seeking had a direct effect on hours of music practice. It is possible that some students seek help when it was necessary, whereas, others thought it was not necessary as long as they were willing to postpone immediate impulses and stay at home practicing music rather than going out to have fun with their friends. Delay of gratification also mediated the effect of self-efficacy and self-regulation on hours of music practice, and that indirect effect explains a significant amount of variance (R^2 = 18). These findings suggest that delay of gratification plays a pivotal role in music learning, which support Bembenutty's (2002) study in which he found a direct and indirect effect of academic delay of gratification and self-efficacy on academic performance among non-music college students.

Although self-efficacy was related to music practice(r = 21), it did not affect music practice directly; rather, the relationship was mediated primarily via self-regulation and delay of gratification. This suggests that for these students self-efficacy alone is not a sufficient condition to practice music. In addition, they need to use appropriate self-regulatory strategies if they want to successfully complete their music assignments, seek help from appropriate sources, maintain a low level of anxiety, and delay gratification.

In summary, the results of the path analysis showed that students' self-efficacy beliefs to successfully complete their music practice had a direct effect on their willingness to delay gratification and self-regulation of learning music. Students' self-efficacy beliefs and self-regulation influenced their use of help seeking and anxiety level. These self-regulatory beliefs and behaviors in turn had a direct or indirect impact on students' music practice.

The third research objective examined what characteristics of music students are useful for predicting' their perception of themselves or the teacher as more responsible for motivation, behavior, and use of strategies for learning music. Research studies showed that (Kitsantas & Zimmerman, 2009; Zimmerman & Kitsantas, 2005) perceived responsibility was predicted by self-efficacy for learning, quality of homework, and prior academic performance among parochial high school girls and college students. In this music study, the lack of a model fit when perceived responsibility was included in the proposed model is notable. Based on the correlation analysis, perceived responsibility was only associated with intrinsic motivation (r = .16, p< .05), and it was excluded from the final model.

The results of the cluster analysis based on whether students believed that the teacher rather than they were more responsible for learning music revealed two highly interpretable solutions. Some students believed that their teachers were mainly responsible for their motivation, behavior, and learning music differed and some students believed that they were mainly responsible for learning music. However, delay of gratification was the only variable that significantly distinguished these two groups of learners.

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After controlling for gender, delay of gratification significantly predicted cluster classification. Students with a higher tendency to delay gratification reported that they were more responsible for their learning while students who believed that the teachers were more responsible tended to report low preference for delay of gratification. Consequently, when music students are unable or unwilling to postpone immediately available rewards to achieve long-term music goals, they tend to believe that their teachers are more responsible for their music skills.

Educational Implications and Directions for Future Research

This study suggests that hours of music practice and frequency of doing music practice are a function of students' motivational beliefs and use of self-regulatory learning strategies. The current findings attest to the important role of self-efficacy, self-regulation, delay of gratification, and help seeking in mastery of music skills. Taken together, these findings call for music educators to assist their students in acquiring the necessary confidence level to master music skills. Following Bandura (1997), educators could use verbal prompts, such as "You can do it," and "Believe that you have the skills to perform this piece of music," in order to enhance students' self-efficacy beliefs.

In relation to self-regulation, educators could model to the students the appropriate music steps, help them to set specific and attainable goals, and show them how to check for mistakes during music practice. Similarly, educators could motivate students to strategically seek help from appropriate sources such as knowledgeable peers, tutors, or parents. Music teachers should be available to students and maintain an open door disposition for the students to seek help when it is needed. Music teachers could help their students delay gratification by showing them how to set priorities, to value the importance of practicing music, to monitor their practice, and to avoid distractions that would prevent them from reaching the music homework goals.

This study has some limitations. First, the sample size is relatively small. However the statistical power (Cohen, 1992) is of a sufficient size to establish an adequate goodness of fit for the path model. A second limitation of this study was that the only objective report of the students' behavior and performance was obtained by the instructors. Observation across time could have revealed more information about the students' actual behavior. Nevertheless, future studies should consider examining students' motivational beliefs, use of self-regulatory strategies, and music practices more frequently during the semester. A comment is required about the participants and academic context used in the present study. The music students were all of Indian descendant and they live in a social environment in which parents are very supportive of their children music education. Thus, the findings of the study may not generalize to other populations.

In summary, the results have important implications for music education of students with low level of motivation and those who lack self-regulatory learning skills. First, music teachers should be aware that students could benefit from more

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instructional support as well as from training enhancing their self-efficacy beliefs. Second, these students should be taught that seeking help from appropriate sources when it is needed is not an indication of dependence, low self-esteem or self-worth. Rather, they should understand that seeking help is indeed a way for them to become autonomous and self-directed while practicing challenging music assignments.

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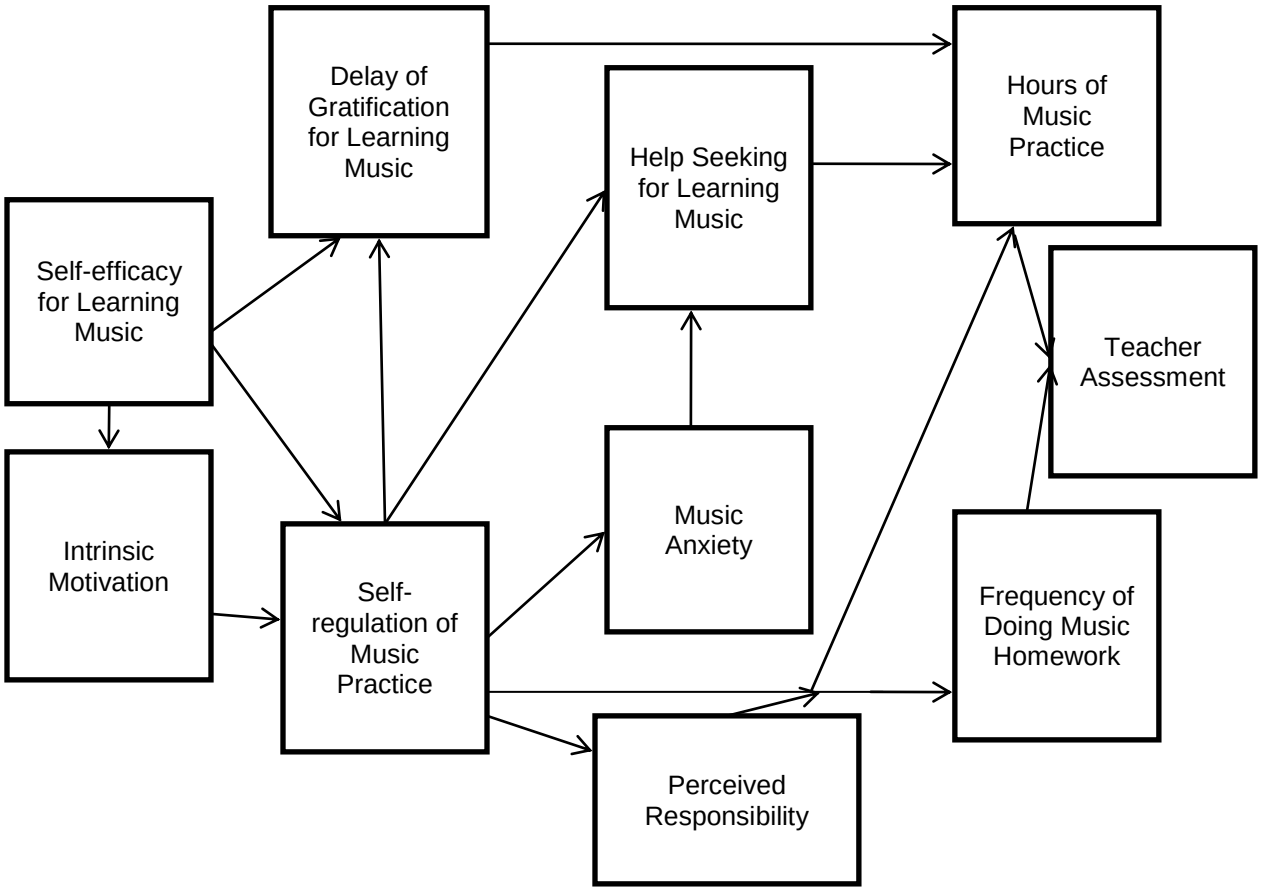
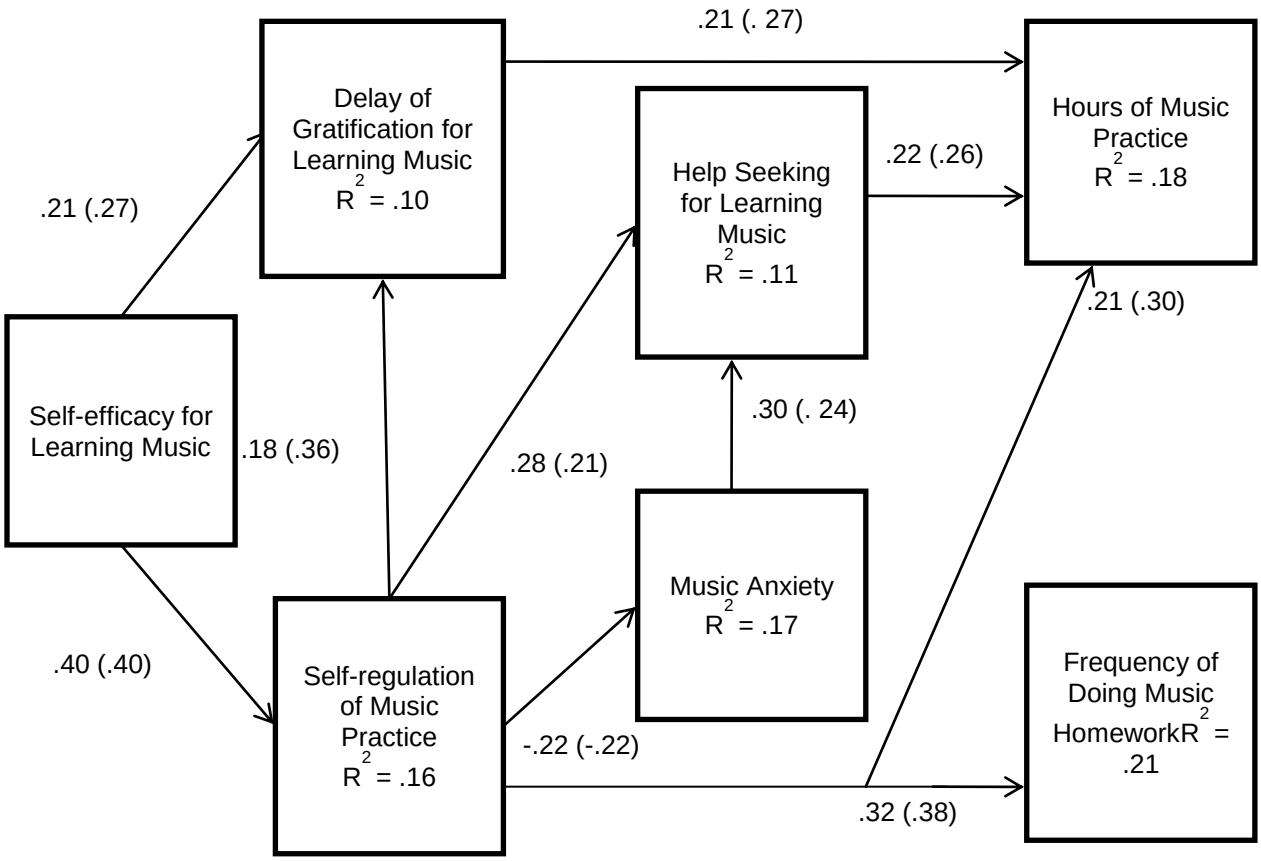
Appendix A
Figure 1. Predicted Model



Appendix B
Figure 2. Final Model



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