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Effect of music education on early adolescents' adaptive skills, health-enhancing behaviors, and self-efficacy

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THE EFFECT OF MUSIC EDUCATION ON EARLY ADOLESCENTS' ADAPTIVE SKILLS, HEALTH-ENHANCING BEHAVIORS, AND SELF-EFFICACY

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ABSTRACT

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The present study investigated the relationship between early adolescents' participation in middle school music programming and behavioral and emotional functioning. Specifically, the association between students' music involvement and the practice of certain healthy behaviors (diet, exercise, seatbelt use, helmet use, and sleep), adaptive skills (interpersonal relations, relationship with parents, self-esteem, and self-reliance) as well as levels of self-efficacy was examined. Based upon previous research demonstrating positive effects of participation in extracurricular activities on the above mentioned constructs, it was hypothesized that similar findings would emerge for those students involved in school-based music programs. The development of health behaviors, adaptive behaviors, and high levels of self-efficacy are thought to be important in preventing and intervening with many of the obstacles youth face educationally, behaviorally, and emotionally.

Participants included 207 fifth through eighth grade students from two school districts in Western Massachusetts. Specifically, members of the school music program (band, choir) and a group of their peers who did not participate in the school music program were assessed. All participants completed a demographic questionnaire as well as the following battery of instruments: the *Health-enhancing Behaviors Index*, the

Behavior Assessment System for Children, Second Edition, and the *Self-efficacy Scale*. Results suggested that students involved in music programming significantly differed in relation to their health behaviors, with music students reporting higher levels of health-enhancing behaviors than non-music students for one school. Groups did not differ in regards to their self-reported levels of adaptive behaviors or self-efficacy. Further, gender, as well as length and breadth of music participation did not appear to contribute to the significant differences in health-enhancing behavior scores. Limitations to the current study and recommendations for future research are discussed as they pertain to music education and adolescent wellness.

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CHAPTER I

INTRODUCTION

For centuries, the importance and benefit of music has been extolled by philosophers and community leaders around the world. Many have argued that music plays an important role in the development of a healthy person. This includes growth in the areas of academic, social, and cognitive development, character building, perception, civility, relaxation, and imagination (Diamantes, Young, & McBee, 2002; Hedden, 1982; Van der Linde, 1999; Viney & King, 2003) as well as motivation, cooperation, social skills, attention, and discipline (Undercofler, 1997). In 300 B.C., Plato wrote that music "is a more potent instrument than any other for education" (Van der Linde, p. 611). Similarly, Aristotle argued that "music has the power of producing a certain effect on the moral character of the soul, and if it has the power to do this, it is clear that the young must be directed to music and must be educated in it" (Aristotle, trans. 1944, p. 661).

It has long been thought that music may affect humans on many different levels. Albert Einstein credited music as being the impetus behind his theory of relativity; "It occurred to me by intuition, and music was the driving force behind that intuition . . . My discovery was the result of musical perception" (Sri Kantha, 1996, p. 135). Former President John F. Kennedy argued the necessity of music for the sake of civilization; "The life of the arts far from being an interruption, a distraction, in the life of a nation, is

close to the center of a nation's purpose … and is a test of the quality of a nation's civilization" (Kennedy, 1962, p. 4).

Within this decade, politicians have continued to discuss the virtues of music education with respect to learning. Alan Greenspan, in his commencement address at Harvard University, remarked, "Viewing a great painting or listening to a profoundly moving piano concerto produces a sense of intellectual joy that is satisfying in and of itself. But, arguably, it also enhances and reinforces the conceptual processes so essential to innovation" (Greenspan, 1999). Similarly, former president Bill Clinton commented, "Learning improves in school environments where there are comprehensive music and arts programs. They increase the ability of young people to do math. They increase the ability of young people to read. And most important of all, they're a lot of fun" (Clinton, 2000). Most recently, President Barack Obama championed arts education as "indispensible for success in a rapidly changing, high skill, information economy" (Obama, 2009).

In addition to supposedly being fundamental to a person's psychological, spiritual, and intellectual development, music has been used to intervene when problems in functioning occur. Hypatia, a highly respected philosopher and teacher in Alexandria during the 5th century, was said to be one of the first people to recommend music therapy to treat emotional disorders. Her use of music therapy to treat mental disorders is thought to be one of several heresies that she committed that may have contributed to her murder, as music therapy was seen as a form of paganism that went against the religious and political beliefs of the time (Viney & King, 2003). Fortunately, attitudes have changed greatly and the benefits of music therapy are now well-recognized. Author and physician, Dr. Oliver Sacks

described how music can animate people with Parkinson's disease, allow stroke victims to speak, and calm and organize people suffering from Alzheimer's or schizophrenia (Sacks, 2007).

Throughout the years, music educators, policymakers, and researchers have continued to research, write, and speak about the importance of music in a child's development, making claims that music education can have a powerful motivational, social, and academic effect on a child's life (Winner & Hetland, 2000). They have also argued that the study of music from an early age enables children to develop such adaptive skills as creativity, problem solving, self-expression, self-discipline, an ability to interact with others, as well as a cultural awareness (Camilleri, 2000; Graham et al., 2002; Moga, Burger, Hetland, & Winner, 2000; Winner & Hetland). Qualitative research on high school students' motivation to join school orchestra, band, or choir programs indicated that students viewed themselves as being nurtured in every area of development by performing in ensembles: intellectually, psychologically, emotionally, socially, and musically (Adderley, Kennedy, & Berz, 2003). These students and their peers viewed music students as talented, intelligent, and underappreciated.

Duke (2000) informally observed that music students had a sense of pride and personal accomplishment in what they were doing and a sense of belonging to a group. Further, he noted that these students recognized they were contributing to a common goal that extended beyond themselves. These observations agree with what other professionals have seen in the schools. Researchers have suggested that a sense of pride and belonging to a group is important for students to feel connected to their school; they are then less likely to use substances, engage in violence, or initiate sexual activity at an early age (McNeely,

Nonnemaker, & Blum, 2002). Being a part of a band or choir may be one type of "group" to which students belong. Therefore, this area of study is an important endeavor if it can establish a relationship between participation in school music education and positive health and social-emotional outcomes for youth.

While there are many informal observations about the effects of music education on a child's development, there is a limited amount of empirical work in this area. However, these observations do provide a backdrop for the type of research that is needed. These observations also allude to the potential benefits of music to a person's healthy development. They suggest that music mediates the unhealthy and maladaptive behavioral difficulties faced by youth and may also mediate low self-efficacy.

The movement toward positive psychology, pioneered by Martin Seligman, recommends that researchers and educators begin to look at the strengths and virtues in people that allow individuals and communities to thrive and grow. Positive psychologists seek to foster wellness by focusing on strengths and talents rather than on seeking a cure for illness (Seligman & Csikszentmihalyi, 2000). Thus, within a response to intervention framework, they focus on prevention (or Tier 1 universal intervention for all students). Music education may fit well within this framework by helping students develop strengths, skills, and competence.

Empirical research in the areas of music education and children's healthy development is the type of data that may make a difference, because it connects to the goals of schools. As school psychologists, it is recommended that we move beyond assessment and diagnosis and become more involved in ameliorating some of the problems that children face (Sheridan & Gutkin, 2000). If we can help foster programming that benefits

students, then perhaps we can start seeing improvement in children's academic achievement as well as their social-emotional and behavioral functioning.

Statement of the Problem

It is recognized within the fields of medicine, education, and psychology that children today are facing numerous obstacles to healthy development and learning (Sheridan & Gutkin, 2000). The U.S. Department of Health and Human Services Centers for Disease Control and Prevention has outlined 21 Critical Health Objectives for Adolescents and Adults to be reached by the year 2010 (U.S. Department of Health and Human Services, 2000). These represent the most critical health and safety issues facing youth ages 10 to 24; they include reducing incidence of mortality, unintentional injury, violence, and substance abuse as well as promotion of mental health, reproductive health, and prevention of chronic diseases during adulthood. Some of the more critical difficulties facing youth today, as they relate to the health and social-emotional well-being of children, are outlined below.

In 2004 there were 12.5 million children (17%) living in families with incomes below poverty thresholds. Poverty rates were highest for African American (33%) and Hispanic (29%) children (Federal Interagency Forum on Child and Family Statistics, 2006). Further, 37% of children lived in families reporting housing problems and 19% were classified by the USDA as "food insecure." Poverty creates many challenges for children and school systems. Classrooms become more diverse, making teaching and learning more challenging (Pellino, 2006). Students facing these challenges often experience high mobility leading to irregular attendance. They generally achieve lower grades than upper or middle class students and may lack motivation and readiness to learn. Further, relationships and

involvement with families may be more challenging (Pellino). In-school music classes may provide an arena for these students to belong. Lack of family funds as well as frequent mobility may make it difficult for these students to participate in outside groups, which makes in-school programming all the more important.

Health is another growing concern for children in America, as rates of obesity are steadily climbing. From 1976 to 1980 six percent of children ages 6 to17 were overweight. By 2007, that rate rose to 15.8% (CDC, 2008). In a national survey, 29.3% of high school students surveyed described themselves as overweight and 45.2% were trying to lose weight (CDC). In fact, the CDC found that 79% of students surveyed in 2007 were not eating the recommended amount of fruits and vegetables and 65% were not meeting recommended levels of physical activity. Instead, students were watching television (35%) or playing video or computer games 3 or more hours a day.

Students' concerns with weight have led to some going without food, taking diet pills, powders or liquids, self-inducing vomiting, and taking laxatives (CDC, 2008). Emerging research points to a connection between physical activity and good nutrition and academic achievement (CDC). Conversely, students weak from hunger are likely to have difficulty concentrating on their class work and working to their potential. Good nutrition, which is just one aspect of health-enhancing behaviors, is becoming increasingly important within the educational setting.

While the prevalence of some of the high-risk behaviors that children and adolescents engage in has been decreasing, many students continue to participate in activities that put them at increased risk of injury or death. In 2007, the CDC found that nationwide 11.1% of students had rarely or never worn a seat belt when riding in a car

driven by someone else, an increase from 2005 (CDC, 2008). Of the students who had ridden a bicycle (66.8%) or a motorcycle (24.3%) during the months before the survey, 85.1% and 33.9%, respectively, had rarely or never worn a helmet, increasing their risk of injuries (including traumatic brain injuries) if an accident were to occur.

Children's social-emotional well-being is also of concern. For example, 28.5% of students reported feeling sad or hopeless almost every day for more than two weeks in a row and had ceased engaging in activities they had previously enjoyed (CDC, 2008). Students have contemplated suicide (14.5%), made suicide plans (11.3%) and attempted suicide (6.9%). In fact, suicide is the third leading cause of death for 15 to 24-year-olds. The largest increase in this age range is for African American males. While suicide for young children is rare, the CDC (2006) reports dramatic increases in suicide rates for children age 10 to 14. Unbelievably, only 36% of youths at risk for suicide during 2001 received mental health services (Crockett, 2003).

The role of schools in prevention and intervention of mental health concerns and development of children's wellbeing is crucial (Sheridan & Gutkin, 2000). Educators and school mental health providers are becoming increasingly aware of their need to expand their practice to include prevention. In fact, some have argued that it will not be sufficient to improve academic areas in isolation (Doll, Zucker, & Brehm, 2004). Promotion of wellness involves the reduction of disorder and disease as well as the enhancement of mental and physical health (Mcloughlin & Kubick, 2004), including behavioral, psychological and social factors (Peterson, 2006). Health behaviors, adaptive behaviors, and self-efficacy are three such constructs that are important in the development of wellness in youth.

Conversely, when children do not develop wellness they are at increased risk for behaviors such as maladaptive behaviors such as violence. In addition to causing injury and death, youth violence affects communities by increasing the cost of health care, reducing productivity, decreasing property values, and disrupting social services (Mercy, Butchart, Farrington, & Cerdà, 2002). Direct and indirect costs of youth violence (e.g., medical, lost productivity, quality of life) exceed $158 billion every year (Children's Safety Network Economics & Data Analysis Resource Center, 2000).

There are protective factors that help mediate whether a youth is going to be involved in maladaptive behaviors. These include, but are not limited to, a feeling of connectedness to family or adults outside of the family, a commitment to school and involvement in social activities (CDC, 2006). In fact, some have found that school connectedness predicts a variety of health outcomes (Thompson, Iachan, Overpeck, Ross, & Gross, 2006). Students who feel connected to their school are less likely to use substances, engage in violence, or initiate sexual activity at an early age (McNeely et al., 2002). They are also more likely to endorse emotional well-being and better health as well as decreased levels of suicidal ideation and depressive symptoms (Blum, McNeely, & Rinehart, 2002; Eccles, Early, Fraser, Belansky, & McCarthy, 1997; Jacobson & Rowe, 1999; McNeely & Falci, 2004; Resnick et al., 1997). Students who participate in extracurricular activities report higher levels of school connectedness than those who do not (Thompson et al.). Music education may be one such social activity that promotes school connectedness.

Researchers and educators have found that school-wide systems of positive behavior supports (SWPBS) are one way that educators and clinicians can intervene early

with at-risk students in an effort to prevent or reduce emotional and/or behavioral challenges. SWPBS provide a continuum of instructional and behavioral supports for all students that aim to prevent the development or worsening of problem behaviors and that encourage the teaching and reinforcement of pro-social behaviors across environments (Sugai, Simonsen, & Horner, 2008). SWPBS utilize a three-tier model of primary (for all students, prior to problems), secondary (for small groups of students, to reduce initial problems) and tertiary (for individuals with the most intense problems that have not responded to primary and secondary interventions, to prevent crises and long-term consequences) intervention.

Some data show that providing these systems of positive behavioral supports may lead to decreases in office referrals and the amount of time students spend in school suspension, resulting in hundreds of additional available instructional hours and corollary academic growth for students as well as increased administrator time for other tasks and fiscal savings for school districts (Scott & Barrett, 2004). Building healthy contexts for children, which includes outlets for creativity, is an integral piece in preventing and intervening with the many challenges that children face (Tier 1 primary prevention with the SWPBS model). Music education may be one such outlet.

Rationale for the Study

Music education may help children develop some of the skills and personal assets necessary for preventing negative social-emotional, health, and behavioral outcomes in their lives. It has been suggested that the most effective way of creating resiliency in children is not by changing the child, but by changing the environment within which the child lives and learns (Doll et al., 2004). Doll and Lyon (1998) proposed that building

healthy contexts for children fosters resiliency. They argued that this is accomplished by developing:

1. Close and nurturing relationships between children and their caretakers;
2. Providing children with access to successful adult models;
3. Supporting children's achievement and self-efficacy orientation;
4. Providing children with opportunities to practice self-regulation;
5. Providing support for warm and effective peer relationships; and
6. Developing connectedness within and among families and with formal and informal community groups that serve families.

Further, research in the areas of developmental assets and positive youth development has suggested that focusing on strengths as well as enhancing protective factors allows youth to become more resilient to negative influences in their lives (Zullig, Ward, King, Patton, & Murray, 2009) and may help prevent problem behaviors (Connell & Kubisch, 2001). Protective factors include such constructs as involvement in structured activities, adult mentoring, and perceived school connectedness (Zullig et al.).

Providing youth with supportive relationships that connect them with others throughout the school and community is said to be important (Ersing, 2009). The research in this area demonstrates that the more assets a youth possesses, the more resilient the youth is going to be to negative life circumstances and the less likely that youth will engage in negative or unhealthy behaviors. This is particularly important during the adolescent years when young people tend to struggle with the transition toward adulthood (Ersing).

Problem-behavior Theory (Jessor, 1987; Jessor, Donovan, & Costa, 1991; Jessor & Jessor, 1977) has, similarly, focused on the role of protective and risk behaviors in adolescents' development. This focus includes the role of a person's environment, personality, and behavior in regards to pro-social behavior, health-compromising and health-enhancing behavior, and problem behaviors. The basis of Problem-behavior Theory is that behavior is learned and that it serves a functional and purposive role in the attainment of goals. Thus, it is an adolescent's social, psychological, and behavioral characteristics that are relevant to problem behavior, rather than biological or genetic factors.

Three systems are the focus of Problem-behavior Theory: the personality system, the perceived environment system, and the behavior system. First, the personality system consists of an adolescent's values, expectations about achievement and autonomy, beliefs about self and the social world, and attitudes about morality. The second system of perceived environment system consists of the adolescent's perceived controls, supports, models, and approval for model behavior. The last system is broken into two parts: conventional behavior, which encompasses such things as achievement and unconventional behavior, which involves problem behaviors (Jessor, 1987). Within these three systems, there are either "instigations" to problem behaviors or "controls" against it. Together, instigations and controls create a state of "proneness." Proneness is one's likelihood to engage in normative behavior or problem behavior (Jessor). While Problem-behavior Theory originally was designed to look at problem behaviors, subsequent research has used this theory to predict health-related behaviors as well as risk behaviors that are important to resiliency in children.

Music education may provide children with some of these essential components of resiliency. After-school cultural arts programs (music, visual arts, and dance) offer youth a place to achieve positive social, emotional, and academic outcomes (Catterall, 1998; Ersing, 2009; Wright, John, Alaggia, & Sheel, 2006). Although the research in this area is limited, those evaluations available have found positive outcomes for youth. Participation in the arts has been correlated with academic success (Caterrall; Catterrall, 2002; Eccles & Templeton, 2002; Heath & Roach, 1998) as well as a reduction in school dropout rates and juvenile offending rates (Posner & Vandell, 1994; Witt & Baker, 1997), particularly for students of less affluent families (Scales & Roehlkepartain, 2003). Community and institution-based arts programs for at-risk youth have also been linked to increased confidence and self-esteem, an ability to cope with emotions and improved cooperation and relationships with peers and adults (Oregon Arts Commission, 1991). Decreases in maladaptive behaviors (conduct and emotional problems) and development of pro-social adaptive skills such as teamwork, trust, accountability, leadership, and character and building peer and family relationships for adolescents have also been reported (Clawson & Coolbaugh, 2001; Office of Juvenile Justice and Delinquency Prevention, 1999; Wright et al., 2006). It follows that in-school music programs may have similar positive outcomes for youth. The benefit of in-school music programming is an important area to study as schools have the potential to reach the greatest number of students, particularly those from less affluent family who may not have the resources (e.g., money, transportation) to get to community-based cultural arts programs.

Purpose of the Study

The present study examined early adolescents' participation in music education, including the amount of time devoted to and the number of years involved in such activities. Early adolescence was defined as occurring between the ages of 10 and 15 years. The relationship between music education participation and early adolescent behavioral, health, and emotional functioning was also investigated. Specifically, the association between students' music participation or non participation in band and/or choir and the practice of certain healthy behaviors (diet, exercise, seatbelt use, helmet use, and sleep), adaptive skills (interpersonal relations, relationship with parents, self-esteem, and self-reliance), and reported self-efficacy levels were examined.

Research Questions

This study investigated the following questions:

Q1. Do young adolescents who participate in in-school music education demonstrate higher levels of health-enhancing behaviors (as measured by the *Health Enhancing Behavior Index Composite*) than a sample of their peers who do not participate in in-school music education?

Q2. Do young adolescents who participate in music education demonstrate higher levels of adaptive skills (as measured by the *Personal Adjustment Composite*) than a sample of their peers who do not participate in music education?

Q3. Do young adolescents who participate in music education demonstrate higher levels of self-efficacy (as measured by the *Self-efficacy Scale*) than a sample of their peers who do not participate in music education?

Q4. What is the nature of the relationship between early adolescents' healthy behaviors, adaptive skills, and self-efficacy as measured by the HEBI Composite, the PAC, and the *Self-efficacy Scale* composite?

Q5. What is the nature of the relationship between early adolescents' gender, years of music education, and level of music participation in relation to their health-enhancing behavior, as measured by the *Health Enhancing Behavior Index Composite*?

Q6. What is the nature of the relationship between early adolescents' gender, years of music education, and level of music participation in relation to their adaptive skills?

Q7. What is the nature of the relationship between early adolescents' gender, years of music education, and level of music participation in relation to their self-efficacy, as measured by the *Self-efficacy Scale*?

Definition of Terms

Adaptive Skills. Adaptive skills were considered to be those skills necessary to successfully respond to developmental and life tasks. In this study, the *Personal Adjustment Composite* (PAC) on the *Behavior Assessment System for Children, Second Edition Self Report of Personality* (BASC-SRP-A; Reynolds & Kamphaus, 2004) was used to define and measure adaptive skills. The PAC includes the constructs of interpersonal relations, relations with parents, self-esteem, and self-reliance.

Early Adolescence. The period of adolescence between the ages of 10 and 15 years.

Health-enhancing Behavior. Health-enhancing behaviors were defined as those behaviors that restore, maintain, or improve personal physical wellness as measured by the overall health score from the HEBI (Jessor, Turbin, & Costa, 1998a). This includes such areas as amount of sleep and exercise, healthy diet, and seatbelt use.

Music Education. Music education was defined as participating in structured music instruction at school, including band and choir.

Self-efficacy. Self-efficacy was defined as the individual's belief that they can control or cope with any given circumstance or situation (Bandura, 1997). In particular, Self-efficacy was a willingness to initiate behavior, willingness to expend effort in completing the behavior, and persistence in the face of adversity (Sherer et al., 1982), as

measured by the *General Self-efficacy* (GSE) score on the *Self-efficacy Scale* (Sherer et al.).

Limitations

There are several limitations to this study. First, once consent was obtained from parents, participation was strictly voluntary. This affected the extent to which results could be generalized, as levels of motivation and attitude toward testing differ between volunteers and those who refuse to participate. In addition, all data were collected using self-report measures. Reliability and validity of information relied on the truthfulness and accuracy of the respondents. Response bias may have resulted if participants responded in a way that they perceived to be desirable to the researcher, or in a manner similar to their peers.

It is also possible that early adolescents may lack the developmental maturity to rate and accurately track their own health behaviors. Ideally, health behaviors would also be rated by parents, teachers, and peers in an effort to obtain a consensus among responses. Moreover, results may not be able to be generalized to other populations of students. Although a matched sample was used to control for factors on some variables (such as outside music lessons and SES), it was impossible to predict and control for every possible confounding variable.

Finally, due to the correlational nature of this study, it is impossible to attribute any significant increases in self-efficacy, adaptive skills and health behaviors to music education participation, as it is possible that students may have entered those music programs because they had high self-efficacy and good adaptive skills and health behaviors in the first place.

CHAPTER II

REVIEW OF THE LITERATURE

American adolescents face numerous risks to wellness as they grow into adults. Therefore, it is imperative schools incorporate activities that support healthy growth and development. Music education may be one such option for helping adolescents navigate this difficult stage by helping them to develop good choice making, adaptive skills, and self-efficacy. This review of the literature traces the recent legislation affecting music education as well as its potential as a universal prevention effort in middle schools.

Historical and Legislative Mandates Dictating the Need for Music Education

Recent legislation has focused on raising student achievement and providing more consistent attention to positive school outcomes through school reform (e.g., Goals 2000: Educate America Act, 2004; No Child Left Behind Act [NCLB], 2002). Music education has also been the focus of educational reform (e.g., National Standard for Music Education; Music Educators National Conference [MENC], 1994). Legislation provided standards for teaching and assessment that included the provision of music within the educational system as a valuable and necessary component to a child's learning and growth. Nevertheless, while well intentioned, these pieces of legislation have many times led to decreased educational time for areas such as music in favor of core academic subjects (reading, writing, and mathematics; Buchanan, 2008).

Goals 2000: Educate America Act

The Goals 2000: Educate America Act (1994) was implemented with the aim of higher expectations for all students. In particular, the Act required that by the Year 2000 students demonstrate competence in challenging areas including, but not limited to, the arts. With the passing of this Act, music and other arts became a requirement in a student's education.

The Goals 2000: Educate America Act specifically stated that all students should:

- Be able to communicate at a basic level in the four arts disciplines (dance, music, theatre, and the visual arts);
- Be able to communicate proficiently in at least one art form;
- Be able to develop and present basic analyses of works of art;
- Be aware of exemplary works of art from a variety of cultures and historical periods; and
- Be able to relate various types of arts knowledge and skills within and across the arts disciplines.

Thus, this legislation indicated that music not only needed to be taught in the schools, but also that students would be required to demonstrate proficiency in the arts just as they did in mathematics and reading.

National Standards for Arts Education

As part of the Goals 2000: Educate America Act, the National Standards for Arts Education (MENC, 1994) were passed. The National Standards for Arts Education purported that it was in the best interest of every child and culture as a whole to sing in tune, play instruments, improvise, compose and arrange, read and notate, listen to,

analyze, evaluate, and understand music. Further, the National Standards for Arts Education stated that students be given reasonable opportunity to learn the skills and knowledge specified if they were going to be assessed on those skills. To accomplish this goal, students needed to be provided with the necessary support by the school, including sufficient courses, staffing, materials and equipment, and facilities. Similarly, teachers required adequate time, materials, and other necessary conditions for teaching.

The National Standards for Arts Education emphasized a shift in philosophy from educating students solely as a future audience of music to being competent producers of music (Kay, 1997). Music education could no longer be looked on as a nice extra, but rather needed to be offered as a necessary and required subject. According to the Goals 2000 and the National Standards for Music Education, time and resources needed to be set aside to teach children these skills. Thus, music education was recognized as an integral component towards a child's academic and personal growth.

No Child Left Behind Act

While the Goals 2000 and the National Standards for Music Education were valued, they were subsequently replaced by the most recent piece of legislation regarding education; the No Child Left Behind Act (2002). NCLB held schools accountable to the United States Department of Education in an effort to achieve academic improvement for all students. This resulted in major changes to educational opportunities for U.S. children. With the passage of NCLB, schools aimed at achieving the following objectives:

1. Making sure all students, including those who are disadvantaged, achieve academic proficiency, in an effort to close the achievement gap;
2. Providing states and school districts with the flexibility to decide how they use federal education funds in an effort to let schools meet their own individual needs;
3. Providing federal assistance for the use of educational programs and practices that have been proven, through rigorous scientific research, to be effective; and
4. Allowing parents of children in low-performing or persistently dangerous schools the freedom and resources to choose to send their children to other better-performing or safer schools within their district or to receive supplemental educational services (tutoring, after-school services, and summer school).

Unfortunately, the NCLB Act had a direct negative effect on music education programs. In 2007, the Center on Education Policy found that a large number of school districts were cutting back on arts and other subjects not found on the standardized tests so that more time could be spent on educating students in mathematics and reading (Buchanan, 2008). Specifically, 44% of the districts surveyed reported cutting the amount of time spent on art, music, science, social studies, physical education, lunch or recess. Those schools labeled “in need of improvement” under NCLB saw even larger cuts. They spent nearly 5 times the amount of time on reading as they did on the arts (Buchanan).

In response to this “back to basics” movement, music educators returned to trying to justify their profession by linking music education to increases in academic

achievement in reading, language, and mathematics (Kratus, 2007). Although academic outcomes are important, it is also critical to consider the whole child. In fact, Christensen and Anderson (2002) noted that school psychologists should look at students' engagement in cognitive, behavioral, and psychological areas, which all correlate significantly with academic achievement. Similarly, Sternberg (2008) discussed the need to define what it means for a school to be "excellent," advocating for a focus on reasoning, resilience, and responsibility in conjunction with the more traditional tested subjects. The impact of music education on the health and wellbeing of youth in all areas (cognitive, behavioral, physical, psychological), thus, appears to be a justified and worthwhile endeavor.

In summary, with the passage of the National Standards for Arts Education (MENC, 1994), music educators attempted to go beyond teaching solely music appreciation (Kay, 1997). Further, these educators tried to transform the dual track of either teaching musicians or teaching future audiences and merge both into one system focused on music competence for everyone. Subsequently, NCLB and high-stakes testing reduced time for music education and created a phenomenon in the schools where some music educators attempted to justify their profession by linking music education to academic outcomes in the "core subjects." Understandably, this is where much of the music education literature lies. Nevertheless, educators are now emphasizing the importance of focusing on positive outcomes in all areas, not just achievement. Similarly, music educators are now suggesting that research needs to move away from determining how music affects reading and mathematics scores and toward examining the effect of music education on learning in general (which will likely affect academic achievement)

and the unique contributions the study of music brings to a individual's overall development (i.e., music for music's sake; Demorest & Morrison, 2000; Eisner, 1999a; Eisner, 1999b; Kay, 1997).

Current Music Education Research

Researchers have looked at the effect of music education on various aspects of academic, cognitive, and social-emotional functioning of youth. Unfortunately, much of the "research" in this area is anecdotal, statements of advocacy, or poorly executed (Colwell, 1995; Hodges, 2000; Lineburgh & Lucas, 1996; Winner & Cooper, 2000). One problem with music education research is that some of those who are carrying out the research are music educators who may not be trained in how to conduct and analyze research (Colwell; Lineburgh & Lucas). Thus, the outcomes are often anecdotal or over-generalized. Further, many times one sees authors citing others' observations or opinions as empirical fact, which leads to faulty conclusions about the benefits of music education (Colwell; Lineburgh & Lucas).

The relative lack of rigorous, empirical research in the area of music education has led to conflicting beliefs regarding the value of music. Nevertheless, there has been some rigorous research completed in the area. The research generally falls into the following areas: the effect of music education on academic achievement, cognitive development, or a person's social-emotional and behavioral development.

Music and Academic Achievement

Much of the research focused on the effect of music education on academic achievement can be broken down into two categories. The first is a group of studies that examined the "*Mozart Effect.*" This term was given to studies originally conducted by

Rauscher, Shaw, and Ky (1993; 1995) who claimed that listening to Mozart's Sonata for Two Pianos, k.448 produced a short-term (10-minute) increase in the performance of college students on a spatial reasoning task. The authors found that students who listened to classical music showed greater improvements in short-term memory than those who listened to no music or minimalist music.

Based upon these results, the authors concluded that the improvement in the "Mozart" group was due to the music, while the improvement in the silence group was due to a learning curve. Since then several researchers have unsuccessfully attempted to replicate the Mozart effect in adults (Carstens, Huskins, & Hounshell, 1995; Chabris, 1999; Newman et al., 1995; Steele, Brown, & Stoecker, 1999). Moreover, McKelvie and Low (2002) tested the Mozart Effect with 103 children ages 11 to 13. Once again there was no support for the phenomenon. Rauscher (2003) concluded that "although the Mozart effect is of scientific interest, its educational implications appear to be limited" (p. 1).

When the work of Raucher et al. (1993; 1995) was published, it exploded on the music scene as music educators and researchers applied results to children and adults of all ages, claiming that "Mozart makes you smarter." For example, even though only one subtest of the *Stanford Binet* intelligence scale was used in the original research, an advocacy report by Yamaha Corporation of America claimed that the Mozart Effect shows that music "raises IQ scores" (as cited in Demorest & Morrison, 2000, p. 34). The recording industry even joined in on the excitement, producing a line a classical music CDs for infants in an attempt to give them a head start. Numerous books and internet

sites also praised the Mozart Effect for improving children's intelligence (Rauscher, 2003).

The second series of research studies involved the effect of piano instruction on preschoolers' spatial-temporal skills (Rauscher et al., 1997). The authors hypothesized that piano lessons would produce long-term increases in spatial-temporal skills of preschool children. Rauscher et al. provided 34 preschoolers (ages 3-0 to 4-9) with private keyboard instruction and group singing instruction over the course of a two-year period. The remaining 44 students were assigned to one of three groups: singing, computer, and no lessons. The authors found a significant increase in spatial-temporal ability for the students who had the keyboard training. No significant results were found for any group when measuring spatial-recognition.

A critical analysis of this study showed a number of problems. First, Rauscher et al.'s (1997) claim that music instruction improved spatial-temporal ability was based upon one subtest of the WPPSI-R (Object Assembly). While the researchers found significant results for the Object Assembly task, the results of the other tasks were not significant. Further, the results were classified as long-term, yet they only lasted one day. As with their previously mentioned research, Rauscher and her colleagues justified this finding by saying that in scientific circles one day is considered long–term. Regardless, this finding was not useful for determining whether music instruction increased academic performance or cognitive ability over extended periods of time. Further, keyboarding is rarely taught in schools while singing is the most common form of music education. It is important that educators begin to examine what effects more comprehensive music

programs used in the schools have on academic achievement, as opposed to formats that are rarely used in the schools (Demorest & Morrison, 2000).

Despite the flawed nature of these studies, they did launch a more intensive interest in the effects of music, leading to better, more controlled studies. Specifically, later research examined the effects of music education on the areas of reading, mathematics, social studies, and spatial reasoning.

Music and Reading

Several authors have looked at the connection between music education and reading performance, with mixed results. Butzlaff (2000) conducted a meta-analysis of 25 correlational studies involving instrumental and / or vocal music instruction and reading. He included studies that used a standardized measure of reading ability (e.g., the verbal portion of the *Scholastic Aptitude Test*), had a test of reading ability following music instruction, and supplied sufficient statistical information to calculate an effect size. His analysis revealed a strong and reliable correlation between music instruction and reading test scores. Although a positive finding, none of the studies supplied pretest information on reading ability. Therefore, it is impossible to determine if reading scores improved due to music instruction or whether they were high prior to the instruction. In fact, other research has found that instrumental music programs tend to attract students who score higher than non-music students on standardized test at the outset (e.g., Fitzpatrick, 2006).

Butzlaff's (2000) attempts to create a causal link between music education and reading achievement were not successful. The author noted that there were two different experimenter expectancies in the studies. Specifically, recent studies attempted to show

that music education improved academic performance, while earlier studies tried to demonstrate that attending “pull out” music programs would not decrease academic performance. Butzlaff completed a linear contrast analysis to examine the effect of the experimenters’ expectancies and found that the magnitude and direction of the effect sizes significantly changed from negative to positive according to publication year. He explained this phenomenon by saying that authors of more recent studies were more likely to be expecting a positive relationship between music and reading, as this has been argued by arts advocates as a justification for having music programs in the schools. This finding demonstrates a need for more rigorous research methodology in these types of studies.

Subsequently, Standley (2008) conducted a meta-analysis on experimental research examining the effects of music participation on reading skills, particularly visual decoding ability. Thirty studies were included in this meta-analysis. Standley found that music interventions generally had a positive and significant effect on the teaching of reading skills. Nevertheless, several results indicated lower performance for students receiving music instruction than those not in regards to reading performance. Thus, the effect sizes of studies designed to use music to teach reading were inconsistent.

Eight areas were identified as significantly contributing to this inconsistency and included: date of the study, publication status (published or unpublished), sample size, type of dependent measure, educational classification of participants, grade level of participants, use of music, and music/control comparisons. Specifically, published articles showed a significantly greater effect of music instruction on reading scores, highlighting editorial biases and justifying the need to look at unpublished work. Music

to improve reading was significantly more beneficial for younger students and for at-risk, special education, and English as a Second Language (ESoL) learners, as opposed to typically developing students. It was noted that music to improve reading was significantly more effective when added to the existing music curriculum rather than when used as a replacement. Duration and numbers of hours of intervention did not appear to make a significant difference in the variances found.

Music and Mathematics

According to conventional wisdom, music and mathematics are related. It seems to follow that since musical rhythm is based upon mathematical concepts such as counting, number recognition, fractions, and understanding symbols and their meanings, an education in music is going to improve children's mathematical skills (Diamantes et al., 2002).

In order to determine if there was a relationship between music education and mathematics achievement, Vaughn (2000) completed a meta-analysis of research in this area. From an original pool of 4,000 references attempting to link music education to mathematics achievement, 20 correlational studies from 1950 to 1999 were examined. The total sample included 5,788,132 children between third and sixth grade who participated in one to six years of music instruction (sample sizes ranged from n=34 to n=648,144, with a mean of n=286,907). Results indicated a modest, positive association between voluntary music education and mathematic achievement. While this is an important finding to further the case of music education, it also leaves many questions unanswered. For example, it does not tell us whether students who choose music education (or go to schools with music programs) come from a higher socioeconomic

background, attend schools with better academic programs and/or more resources, or are raised by families who value music education and academic achievement more than students who do not participate in music education (Vaughn). Further, due to the correlational nature of the work, it is possible that students who chose music had higher math scores in the first place. It is important to note that of the 20 studies, only two were published. Seven of the studies were unpublished doctoral dissertations, ten originated from unpublished tabulated data (College Board studies), and one was from a conference presentation.

In an effort to look more closely at a possible causal relationship between music education and mathematic performance, Vaughn (2000) completed a meta-analysis of 6 experimental studies involving a total of 357 children. In these studies, children participated in instrumental or vocal instruction for a period of four months to two years and then were tested on their mathematic ability. Results indicated a small causal relationship between music education and mathematic ability. Specifically, three of the studies produced modest effect sizes and three produced nearly no effect. Vaughn reported that type of instrument, instructional method, and presence or absence of instruction in musical notation was confounded so that none of these variables could be tested separately. Thus, more rigorously designed studies are necessary to further illuminate a possible causal link between music instruction and mathematics performance.

Research completed by Graziano, Peterson, and Shaw (1999) produced the highest effect size out of this group of studies. In this study, 237 second grade students received six months of piano lessons along with the use of a mathematics video game that

the authors had developed to teach proportional math. Students who received the keyboard lessons along with the use of the mathematics game displayed significantly better proportional math and fraction skills than those students who simply had access to the mathematics game. It is possible that the combination of music education and the particular spatial-temporal mathematics instruction (mathematics video games) that these students received led to improved mathematics performance (Vaughn, 2000).

Graziano et al. (1999) also completed qualitative interviews with the children's teachers and found that the students had improved in several academic areas. One teacher reported that four out of five significantly below average students from the music and math group caught up in mathematics performance after one month of the training. Further, teachers did not find that the time for lessons interfered with time necessary for classroom instruction in other academic areas.

It appears that music instruction may produce a modest effect on reading and mathematics performance, particularly for younger students and at-risk learners. Inconsistent meta-analysis results in these areas point to a need for more rigorous research. Although not as well researched, there is also a body of research that has examined other indicators of positive academic outcomes including grades, standardized test scores, and graduation rates.

Music and overall achievement

Grade point average. Research has not only looked at achievement gains in specific areas such as reading and math but also at overall academic performance. Linch (1994) found evidence of significant differences in the grade point averages of music participants, non-participants, and students who discontinued instrumental music

instruction. Her study involved 341 juniors from five Midwestern high schools. Students were administered the *Coopersmith Self-esteem Inventory* and a demographic questionnaire concerning music participation. Students' grade point averages were also obtained. Participants were currently involved in music (*n*=43), had never participated (*n*=143), or had discontinued participation (*n*=155). No significant differences were found between the groups for self-esteem, whereas significant differences were found for grade point average. Thus, it appears that students who participated in music education had higher overall academic achievement than those who did not. However, no conclusions about causality could be drawn due to the correlational nature of the study.

Other authors have found that it is not just participation, but rather achievement in music education, that is predictive of significant outcomes in academic subjects. Gouzouasis, Guhn, and Kishor (2007) reported that across three British Columbia student cohorts, music participation (band, strings, choir, and music composition) was associated with generally higher academic achievement. Further, Grade 11 music course scores predicted Grade 12 academic achievement scores. While the relationship was statistically significant for all areas of achievement measured, the relationship between music participation/ achievement and achievement in mathematics and biology was consistently greater than it was between music participation/ achievement and English. The authors concluded that time spent on music education does not impede upon success in "core" academic subjects (in this case, mathematics, English, and biology), but goes along with and actually fosters academic success in other subjects, particularly in mathematics and biology.

Standardized test scores. Much has been written in the popular press regarding the beneficial effects of the arts on academic achievement. Specifically, there have been claims that music education increases scores on standardized tests such as the SAT (Vaughn & Winner, 2000). For example, testimony presented to the U.S. House of Representatives Education Caucus in July of 1999 stated, "Music actually makes our kids smarter…The College Board last year documented a 100-point gap in SAT scores between students who had music instruction during their early elementary school years and students who did not. The longer students study music, the greater the gap in scores" (as cited in Vaughn & Winner, p.77). Scientific research in this area appears to have some promising results.

In an examination of 15,431 fourth-, sixth-, and ninth-grade students' *Ohio Proficiency Test* scores, Fitzpatrick (2006) found that when compared to others of like SES, instrumental music students outperformed non-instrumental students in every academic subject measured (citizenship, math, science, and reading) and at every grade level. Instrumental students at both levels of SES held higher scores than their peers from the fourth grade on. This finding indicates that music instruction may attract higher performers from the beginning. Interestingly, there was a pattern of increased achievement by the lower SES instrumental students that led to them eventually surpassing their higher SES non-instrumental classmates by the ninth grade in all subjects.

In addition to looking at the effect music instruction may have on test performance, research has also looked at the potential impact of students being pulled out of class on their achievement on standardized basic skills tests. Wallick (1998) compared

the performance of fourth grade students who were pulled out of class for string lessons on the *Ohio Proficiency Test* to students of matched ability who had not been pulled out of class. There were no statistically significant differences between the students in the areas of writing or mathematics. On the other hand, there was a statistically significant difference in favor of the string students in reading and citizenship. This research demonstrated that there does not appear to be harmful effects on achievement for students who were pulled out of class for music lessons and, in fact, these students actually did better in the areas of reading and citizenship than those not pulled out of class. Wallick speculated that reading skills could have been enhanced by music instruction, as reading music involves some of the same skills (decoding and interpreting symbols) that are required for reading comprehension as measured on the *Ohio Proficiency Test* (comprehending linguistic symbols, and interpreting maps, graphs and charts). Conversely, as shown by subsequent research in the area of reading and as noted before, children who choose to participate in music instruction may have better developed reading skills to begin with (Fitzpatrick, 2006).

The quality of the music program available at a school appears to be an important factor in the affect on student achievement in other areas. The National Association of Music Merchants (NAMM) Foundation's Sounds of Learning Initiative conducted a study of 4,739 elementary and middle school students in four US regions and found that students participating in high quality school music education programs scored higher on standardized tests than students in deficient school music education programs (Johnson & Memmott, 2006). Published and accomplished music education professors familiar with the programs in their geographic area made the determination as to the quality of the

music programs. The professors were told to select schools that they deemed to be as similar as possible in every regard except for music education quality. They were to judge quality by evaluating whether the schools met the national standards set by the National Association of Music Educators and then to select school from opposite ends of the rating continuum.

Elementary school results revealed that students in top quality school music education programs scored 22 percent better in English and 20 percent better in mathematics than those students in deficient programs. Middle school results showed that students in top-quality instrumental programs scored 19 percent higher in English than students without a music program, and 32 percent higher in English than students in deficient choral programs. Further, students in top quality instrumental programs scored 17 percent higher in mathematics than children in schools without a music program and 33 percent higher in mathematics than students in a deficient choral program. Again, it was difficult to determine whether students of higher ability attended schools with better music programs or whether the programs themselves enhanced learning.

Graduation and attendance rates. Another indicator of student achievement and school success is attendance and graduation rates. A study released by MENC and NAMM reported that 96% of principals interviewed (N=400) agreed that participation in music education encourages and motivates students to stay in school, with 55% "strongly" agreeing with this statement (Harris Interactive, Inc., 2006). Further, 89% felt a high quality music education program contributed to their school producing higher graduation rates.

The evidence appears to back up these opinions. Specifically, the authors found that schools with music programs had significantly higher graduation rates than did those without music programs (90.2 percent as compared to 72.9 percent). In addition, those that rated their programs as “excellent or very good” had an even higher graduation rate (90.9 percent). As the percentage of students enrolled in music classes increased, so did the graduation rate of the school. Attendance rates were also significantly higher for schools that had music programs as opposed to those without programs (93.3 percent as compared to 84.9 percent).

Again, quality of the program was an important factor. For example, graduation rates were better at those schools whose principals said their music program was “stable” or “growing” than at those whose principals said their music program was “eroding.” Schools that received awards for their music classes and/or performing groups and those that offered music classes with a “clear sequence of knowledge and mastery” had higher overall graduation rates than schools that had not (Harris Interactive, Inc., 2006, p. 6). Finally, those schools that had credentialed music teachers had much higher graduation rates than those schools that did not have a fully credentialed music staff. Unfortunately, many other confounding variables (e.g., socioeconomic status of students, available resources) could account for this relationship.

Despite some of the problems with research quality, there does appear to be a small body of evidence that high quality music programs are related to higher levels of reading, mathematics, and other positive educational outcomes for those students who participate. The underlying reason for this positive effect is unknown but may be related to changes that occur within the individual as a result of music participation.

Music Education and Cognitive Development

Music and the Brain

While some researchers have looked for broad behavioral changes in the form of academic achievement, others have focused on more subtle changes that might occur in the brain. While researchers previously believed that more intelligent students enrolled in band and orchestra, there is now evidence that learning to play an instrument develops neural pathways in the brain, which may lead to more efficient brain functioning (Lehr, 1998). Researchers have demonstrated that a student who learns to play music optimizes the bilateralism of the brain. Specifically, brain scan studies have shown that playing music more fully utilizes both hemispheres of the brain than any other activity that has been researched (Wilson, 1989). More recent neuropsychological, transcranial Doppler sonographic, positron emission tomographic (PET) and functional nuclear magnetic resonance (MRI) studies have indicated that music processing is not dependent on the right hemisphere of the brain, but rather utilizes neural networks corresponding to the fundamental components of music in both hemispheres (Baeck, 2002).

Studies involving patients with first unilateral focal cerebrovascular brain lesions in the frontal, temporal, or parietal regions provide further evidence of cross-hemispheric neural networks in music processing strategies (Schuppert, Münte, Wieringa, & Altenmüller, 2000). Thus, music processing does not occur in just one area of the brain, but rather it activates several areas thereby increasing brain utilization and functioning. Additionally, musicians have anatomical and functional cerebral characteristics that have been found to be correlated with the age at which a child begins musical study. This

finding provides evidence for a cortical reorganization as a result of music lessons (Baeck, 2002).

Studies measuring brain activity of 3 to 6-year-old children playing and listening to music found that, similar to adults, music is processed primarily in the right hemisphere, but also often utilizes left hemispheric processing as well (Flohr, Miller, & Debeus, 2000). Further, Flohr et al. found an increase in activity in the temporal regions of both the left and right hemisphere when children listened to music and played rhythm sticks. Unfortunately, the effects of listening to and playing music were not differentiated in this study. In a follow-up with the same children two years later, a significant difference was found in EEG alpha activity when the children listened to new types of music (Flohr et al., 2000). Differing EEG responses were found for Vivaldi music as opposed to Irish folk music, indicating that different styles of music may elicit different processes in a child's brain. Although these two studies are of interest, it has been difficult to align increased brain activity to outcomes (e.g., increased achievement).

Of further interest is that the brain appears to be highly resilient. It has been found that musical ability persists despite impairments such as blindness, deafness, emotional disturbance, profound retardation, Alzheimer's disease, or savant syndrome (Hodges, 2000). Similarly, research on brain-injured patients has shown that the loss of verbal functions (aphasia) is not necessarily accompanied by a loss in musical abilities (Amaducci, Grassi, & Boller, 2002; Tzortzis, Goldblum, Dang, Forette, & Boller, 2000). The reverse has also been found (amusia without aphasia). For example, literature on amusia (the inability to recognize or reproduce musical tones) indicates that destruction

of brain tissue may eliminate a particular musical function, but it does not eliminate music ability entirely (Hodges).

With this in mind, Peretz, Gagnon, Hebert, and Macoir (2004) found that musical abilities are autonomous from language abilities, where a man with severe speech impairments, including stuttering and phonemic errors, was unaffected in his ability to sing. Dementia patients, too, have been found to be severely compromised in cognitive functioning but musically adept (Brontons, 2000) to the point where some dementia patients, while unable to find their own room in a geriatric care unit, can aptly learn new songs (Beatty et al., 1988). As more research is carried out in brain research, music educators may begin to understand what it is about music that affects brain development and processing.

Music and Cognition

While some researchers have focused on the connection between brain development and music, others have focused on how music affects our cognitive processes. Ho, Cheung, and Chan (2003) found that children who completed music training had significantly better-developed verbal memory than those who had not received the training. In this study, a cross-sectional and longitudinal design was used. By using both designs, the authors were able to determine the effect of various durations of music training (0-5 years of instruction) on children's verbal and visual memory and were able to look at a causal relationship between music instruction and verbal memory.

The cross sectional study involved 90 right-handed males ages 6-15 from Hong Kong. Forty-five of the boys had music training; they were members of the band or orchestra and were involved in private music lessons for at least 1 hour per week. Music

training ranged from 1 to 5 years (M = 2.6 years, SD = 1.48 years). The other 45 participants were classmates of the music training group and had no such instruction. Participants were administered a verbal memory test, a visual memory test, and a general measure of intelligence.

The authors found that children who received music training had significantly better verbal retention ability than those who had not participated in music training. They did not find similar results for visual memory. When examining the effect of duration of music training on verbal memory, the authors found a significant correlation between duration of music training and verbal learning, even when controlling for age and years of education. There was no significant correlation between duration of music training and visual memory.

Ho et al. (2003) then looked at changes in verbal memory among a subgroup of children who had completed music training in the first part of their study (*n*=33). Specifically, they looked at children who had participated in the band or orchestra for at least a year as compared to those who had dropped out of the orchestra within three months and those who were just beginning in the program. The results indicated that the beginners had significantly lower verbal memory ability than those who continued and those who dropped out of the music training. Those who had continued with the training and those who had discontinued did not differ from each other in regards to verbal memory. At a one-year follow-up, no group differences were found. The authors suggested that this could be due to the significant improvement in verbal memory of the beginning group after a year. While there was a significant improvement in verbal

memory of the continued group after a year, the group who discontinued training did not demonstrate a significant improvement in verbal memory.

These findings indicate that those students who received and continued their music training improved in verbal memory. While students who discontinued their training did not improve in verbal memory, after nine months their verbal memory skills remained stable. Thus, they did not lose their verbal memory advantage over the students who had not received any music training. Ho et al. (2003) suggested that music training may have a long-lasting effect, though they did not have enough participants to reliably measure this potential outcome.

More recently, other authors have found similar results. For example, Hogan and Huesman (2008) found that college students who had five or more years of music training recalled significantly more words from a 16-item word list than did students with zero to four years of training. The authors noted that the superior recall was linked to better application of a semantic clustering strategy. They deduced that music instruction and language experience may have similar influences on the development of verbal memory.

Further, there is some evidence that music is correlated with creative thinking. Moga et al. (2000) discussed how music education is related to the development of creative thinking in that it engages children, sustains their attention, and encourages “rich connections” (p.91). In a meta-analysis of the literature, Moga et al. found a modest correlation between studying the arts and creativity.

While correlational and quasi-correlation studies have found a connection between music education and various cognitive processes such as verbal memory (Ho et al, 2003), spatial ability (Hetland, 2000), and selective attention (Hurwitz, Wolff,

Bortnick, & Kokas, 1975), these studies were unable to establish a causal link. That is, children with higher ability are more likely than other youth to take music lessons (Orsmond & Miller, 1999). Thus, to establish a causal link between music and intelligence, one must rule out such factors as prior ability, socioeconomic status, and education.

Schellenberg (2004) attempted to do just this by randomly assigning 144 students to two different music (keyboard and voice) or control groups (drama and no lessons). He found that intelligence improved from pre to post test over the span of 12 months for all four groups (standard keyboard lessons, Kodaly voice lessons, drama lessons, and no lessons), but that the combined musical groups had a significantly larger improvement (7 IQ points) than those taking drama or no lessons. There was a small to medium effect size for these results, but they generalized across IQ subtests, index scores, as well as a standardized test of achievement. It appears that extracurricular experiences such as music may play a role in children's development of reasoning and critical thinking abilities.

Music Education and Social-emotional and Behavioral Functioning

While cognition and achievement are absolutely important to a child's ability to learn and function within school and life, so too is positive social-emotional and behavioral development. There are numerous opinions about the secondary effects of music listed in the literature that relate to the healthy development of early adolescents. One such supposed benefit of music education is enhanced positive social-emotional growth. For example, musical play may teach a child about the adult world through pretending and imitation, help the child master his or her physical self by working on

coordination, develop the child's social roles (particularly in multicultural situations), develop affect (which allows the child to express emotions in an acceptable way), and develop creativity (Van der Linde, 1999). Problem solving, concept development, divergent thinking, and language development may be also enhanced through music education (Tarnowski, 1999).

In general, participation in extracurricular activities is correlated with a decrease in delinquent behaviors. Since involvement in music at school often has an extracurricular component, this line of research has been directly supportive of the healthy benefits of music education. For example, Zill, Nord, and Loomis (1995), through an examination of national data from The *Monitoring the Future* survey of high school seniors (*n*=15,000), the *Longitudinal Study of American Youth* (*n*=5,900), and the *National Longitudinal Study of 1988* (*n*=16,489), found that tenth-graders who were engaged in extracurricular activities one to four hours per week reported lower incidences of drug use, sexual activity, and a lower rate of dropping out of school. Adolescents engaged in five to nine hours of extracurricular activities were even less likely to engage in risky behaviors. Conversely, students not engaged in extracurricular activities were 57% more likely to drop out of high school by their senior year; 49% more likely to have used drugs; 37% more likely to have become teen parents; 35% more likely to have smoked cigarettes; and 27% more likely to have been arrested.

When looking specifically at band, orchestra, and drama programs, Zill et al. (1995) found that adolescents participating in these programs were less likely to engage in risky behaviors such as smoking, drinking, sexual activity, and substance abuse. In particular, males who participated in music and drama were about three-quarters as likely

as non-participants to drop out of school, be arrested, smoke or abuse substances while females were two-thirds as likely as female non-participants to drop out of school, be arrested, smoke, or use drugs. The authors proposed that if adolescents were engaged in pro-social activities, they had less time to engage in delinquent behaviors or get into harmful situations. Through participation in these activities, adolescents learn such skills as cooperation, hard work, attention to detail, and patience.

Other authors have also advocated for structured extracurricular activities in adolescence. In a review of the literature, Gilman, Meyers, and Perez (2004) found that while engagement in unstructured, solitary activities (e.g., video games, watching television) for long periods of time has been linked to negative psychosocial outcomes, participation in structured extracurricular activities (such as band or orchestra) with others has been related to a variety of positive outcomes for adolescents, such as self-concept, life satisfaction, and academic achievement.

Absent supports for the development of positive social-emotional functioning, children are at increased risk for chronic behavior problems. In fact, the number of young children at risk for future emotional or behavioral disorders due to chronic behavior problems is increasing (Conroy, Sutherland, Haydon, Stormont, & Harmon, 2009; Sprague & Walker, 2005; Yoshikawa & Knitzer, 1997). Music Therapy has been proposed as a method of intervening with youth who continue to exhibit difficulties in social-emotional and behavioral functioning. Music therapy and exposure to music education may elicit responses such as motivation to participate, positive interactions with others, development of good relationships, communication, space sharing, problem

solving, self-esteem, respect and awareness, all of which contribute to academic achievement (Camilleri, 2000).

Many have advocated for the role of school psychologists in promoting wellness through prevention efforts (Suldo et al., 2009). Further, the facilitation of social-emotional support for students is a necessary component of a school psychologists' job due to the connection between social-emotional health and academic success (National Association of School Psychologists [NASP], 2006). As already noted, it is not simply the absence of mental illness that is important, but also promotion of social, emotional and behavioral health. Although many aspects of social-emotional and behavioral development have been studied in relation to music education, self-efficacy, adaptive skills, and health behaviors were chosen, in particular, for this investigation because of their potential to positively affect children's development both mentally and physically. By developing prevention and intervention programs that promote both mental and physical health, educators can impact children in a number of areas (Miller, Gilman, & Martens, 2008), including but not limited to, school engagement (Furlong et al., 2003) and satisfaction in school and life (Gilman & Huebner, 2003).

Self-efficacy in Adolescence

Self-efficacy is at the center of social learning theory and is defined as one's belief in his or her ability to organize and carry out courses of action (Bandura, 1977). It is also a person's perception of his or her own adequacy, efficiency, competency and control when coping with life events (Schultz & Schultz, 1998). Bandura believed that one's self-efficacy affects such things as decision-making, effort, levels of perseverance, stress, depression, and acknowledgement of accomplishments. Self-efficacy is on a

continuum where one can have low to high levels of self-efficacy. Low levels of self-efficacy produce feelings of helplessness while high levels result in feelings of being able to persevere when faced with difficult situations (Schultz & Schultz). According to Bandura, self-efficacy is developed during childhood. When the development of self-efficacy is fostered throughout childhood and early adolescence, there is a better chance that the effects will last throughout adulthood.

Adolescence is a developmental period when youth may experience varying behavioral and emotional difficulties since their personal and social resources have not been adequately developed for coping with the developmental tasks they face. Challenged by demands they place on themselves and demands placed on them by others, and at the same time not having the resources to cope with stress, many adolescents develop maladaptive behaviors to overcome the stress in their lives (Chung & Elias, 1996). If resources are not put in place and if these behaviors are not addressed, adolescents become at risk for negative physical and mental health outcomes in adulthood (Loeber & Farrington, 2000). The possession of high levels of self-efficacy is, thus, particularly important during this stage in a person's life. Self-efficacy is an important aspect in the development of resiliency in youth.

Self-efficacy research covers a variety of areas including reduction of problem behaviors (Chung & Elias, 1996), smoking (Brandon, Herzog, Irvin, & Gwaltney, 2004; Dino, Kamal, Horn, Kalsekar, & Fernandes, 2004; Harakeh, Scholte, Vermulst, de Vries, & Engels, 2004) alcohol use (Epstein, Griffin, & Botvin, 2004), contraceptive use (Bryan, Aiken, & West, 2004; Villarruel, 2004), violence (Macmillan & Hagan, 2004), and depression (Stewat et al., 2004), as well as promotion of more positive behaviors

such as career planning (Alliman-Brissett, Turner, & Skovholt, 2004; Kerpelman & Mosher, 2004), and volunteering (Omoto & Snyder, 1990; Snyder & Omoto, 1992).

Some studies suggest that those with high levels of self-efficacy are more likely to engage in preventive behaviors, exercise, quit smoking, and have better overall health than those with lower levels of self-efficacy (Bandura, 1986; Gecas, 1989). Self-efficacy has also been linked to the development of positive dental and dietary health behaviors. For example, those with higher levels of self-efficacy have been found to have better dental health behaviors (brushing and flossing; Stewart, Strack, & Graves, 1999). Further, self-efficacy was found to significantly increase the reliability of the prediction outcomes concerning oral health behaviors (Tedesco, Keffer, Davis, & Christersson, 1993). Brug, Lechner, and DeVries (1995) also found a correlation between self-efficacy and the consumption of fruits, vegetables, and salads.

Self-efficacy appears to be an important determinant of present and future health behaviors as well as behavior change (Bandura, 1992; Kok et al, 1992; Stretcher, DeVellis, Becker, & Rosestock, 1986). As such, self-efficacy has become an important determinant in clinical, educational, social, and health development (Schwarzer & Fuchs, 1996). It appears clear that high levels of self-efficacy are an important aspect in developing a person's wellness and health in a variety of areas. It has yet to be researched if music education contributes to higher levels of self-efficacy in adolescents.

Adaptive Skills in Adolescence

Another important component in adolescent well-being is the possession of adaptive skills. Adaptive skills are positive responses that adolescents have to developmental and life tasks. The definition of what is a positive response may be

influenced by the cultural norms of a person's racial-ethnic group and may change as a person moves through different stages of development and life (Horn & Fuchs, 1987). For example, adaptive skills for a young child would include walking, talking, and basic self-care. For the school-aged child, skills expected are broadened to include such things as understanding and responding appropriately to social rules. What would be considered "appropriate" would necessarily differ depending on situation, setting, time and with whom the person is interacting. For adults, adaptive behaviors include the ability to hold a job, maintain a household, and contribute to family life (Horn & Fuchs). In the same way, researchers have differing conceptions of what are important adaptive skills for a person to have. For instance, Reynolds and Kamphaus (2004) indicate that adaptive skills include such constructs as interpersonal relations, relations with parents, self-esteem, and self-reliance.

While the research examining the effect of music education on adaptive skills development is limited, there has been some evidence of the positive relationship between engagement in structured extracurricular activities and higher levels of self-esteem (Eccles & Barber, 1999), internal locus of control (Gilman, 2001), and pro-social behaviors such as attending college, voting, and volunteering (Zaff, Moore, Papillo, & Williams, 2003). Further, extracurricular involvement has been linked to increased honesty and fair play in high school students (Cassel, Chow, DeMoulin, & Reiger, 2001). Cassel et al. noted that these students tended to be role models across context (home, school, community) and seldom became involved in delinquency or crime. Harrison and Narayan (2003) found an association between participation in extracurricular activities (sports, clubs, volunteer work, band, choir, music lessons) and adaptive behaviors (less

likely to skip school, get into fights, vandalize property, smoke cigarettes and marijuana, binge drink, or have sexual intercourse), and health behaviors (exercise, healthy diet), as well as an increase in liking school and doing homework, and expressing positive attitudes about self, peers, teachers, and parents. The results of all these studies are correlational and, thus, one is not able to discern whether participation in the noted activities led to these behaviors or whether students with higher levels of self-esteem, internal locus of control, and pro-social behaviors seek out participation in extracurricular activities such as music.

Research in the area of extracurricular participation is beginning to look at the question of self-selection. Fredricks and Eccles (2006) note that while there is some good evidence of both short and long term gains related to school achievement and educational attainment from extracurricular participation, the cause for the association is unclear. This lack of clarity points to the need for more longitudinal studies with appropriate controls for selection factors as well as randomized, trial experimental studies (Fredricks & Eccles).

Research has indicated that not only is it important to look at participation versus nonparticipation when evaluating positive outcomes for youth, but also duration, number of activities, and breadth of participation (Fredricks & Eccles, 2006). Using data from the Childhood and Beyond Study, a large longitudinal study of adolescent development for primarily white, middle class 7th through 12th grade students, the authors found that greater involvement in extracurricular activities was associated with academic adjustment, psychological competencies, and positive peer context.

Others, similarly, found that quantity and quality of participation were important determinants of positive outcomes for adolescents (e.g., Gardner, Roth, & Brooks-Gunn, 2008; Peck, Roeser, Zarrett, & Eccles, 2008; Roeser & Peck, 2003). For example, adolescents who began high school significantly at risk for negative educational outcomes were twice as likely to graduate high school and enroll in college if they participated in positive extracurricular activities during 11th grade more than one time per week (Roeser & Peck). Participation in organized activities (sports, school clubs, volunteering) had similar positive impacts on college enrollment figures for educationally at risk youth, while those participating in less structured activities (watching TV, hanging out with friends) and paid work were significantly less likely to show educational resilience by entering post-secondary programs (Peck et al.).

Many argue that extracurricular activities are an important component in a youth's development because they provide opportunities to acquire and practice specific social, physical, and intellectual skills in a variety of settings, to contribute to the well-being of one's community, to belong to a socially recognized and valued group, to establish social networks, and to experiences and deal with challenges (Fredricks & Eccles, 2006). These are all important components in the development of positive adaptive skills and the reduction of maladaptive behaviors. It stands to reason that participation in similar activities during the school day would reveal similar results. In fact, some advocate for extracurricular activities being a part of the school curriculum available to all students, instead of the select few who are shown to benefit from out of school participation (e.g., Cassel et al., 2001).

Health-enhancing Behaviors in Adolescence

In addition to self-efficacy and adaptive behaviors, adolescent health behaviors are also integral to wellness. Adolescent health behaviors are those behaviors and decisions an adolescent makes about his or her physical and mental health. Wellness involves both the reduction of disorders and disease as well as improving mental and physical heath (Mcloughlin & Kubick, 2004). Thus, it is not only important to look at factors that have adverse affects on adolescent health, but also behaviors that early adolescents engage in to promote health and the factors that lead adolescents to engaging in health-enhancing behaviors. This includes behavioral, psychological and social factors (Peterson, 2006). Although there is limited research in the area of positive health-enhancing behaviors, there are some notable exceptions.

Adolescent health behaviors have been examined from a systemic perspective focusing on the influence of an adolescent's personal characteristics and the environment (Donovan, Jessor, & Costa, 1993; Jessor et al., 1991; Jessor & Jessor, 1977). Problem behavior Theory (Jessor & Jessor; Jessor et al.) has looked at the role of risk and protective factors on adolescent health behavior. For example, Jessor et al. (1998a) surveyed 1,493 Hispanic, White, and Black high school adolescents in regards to six specific health-enhancing behaviors (healthy diet, regular exercise, adequate sleep, good dental hygiene, and seatbelt use). The authors found that protective factors such as value of health and perceived effects of health-compromising behaviors (proximal/health-related factors) as well as parents who model health behavior, positive orientation to school, friends who model conventional behavior, involvement in pro-social activities,

and church attendance (distal/not directly health-related factors) all have significant positive relations with a person's development of health-enhancing behaviors.

Risk factors (e.g., friends as models for sedentary behavior, eating junk food, feeling stress, and susceptibility to peer pressure) were also examined but did not contribute as much unique variance as did the protective factors. Longitudinal studies of seventh, eighth, and ninth grade students found that the above mentioned protective factors have a moderating effect on risk behaviors (alcohol and drug abuse, delinquency, and sexual precocity; Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995). The buffering effect of protective factors on risk factors has been demonstrated to have cross-national generalizability (Jessor et al., 2003) as well as the ability to be generalized to socioeconomically disadvantaged populations (Jessor, Turbin, & Costa 1998b). That is, research comparing problem behavior theory data in 1972 to data from 1992 found consistent results (Donovan et al., 1999). In this research, problem behavior theory accounted for 40% of the variance in adolescent problem drinking. This indicates that the psychosocial reasons for drinking in adolescence have remained stable despite changes in the larger socio-historical context (Donovan et al.) thus possibly providing educators with a better understanding into how to prevent and intervene with this problem behavior.

Health-enhancing behaviors are related to one's self-efficacy and self-esteem. For instance, Torres and Fernandez (1995) studied 100 adolescents ages 12-13 and 16-17. Self-esteem was measured using the *Gordon Personal Profile* and value of health was evaluated using the *Value of Health Scale*, which examines physical fitness, energy and vigor, physical strength, maintaining a healthy weight, and resistance to illness. The *Health Behavior Questionnaire* was also utilized. The authors found that for young

adolescents, self-esteem was significantly and positively correlated with the personal health, mental health, and social aspects of health behavior. For older adolescents, self-esteem was correlated with mental health and safety. Further, in young adolescents, value of health was significantly and positively correlated with personal health and safety aspects of health behavior and with older adolescents value of health was correlated with nutrition, personal health, mental health, and safety aspects.

Miller et al. (2008) reviewed the proposed link between mental and physical health and how they affect children and adolescents' overall wellness. They focused in particular on the benefits of hope and optimism, school-based extracurricular activities, and sport and exercise psychology as important aspects of school-wide wellness promotion programs for all students. Rainey, McKeown, Sargent, and Valois (1998) also found evidence of athletic participation increasing healthy eating behaviors. Extracurricular activity participation may be particularly important in middle childhood due to the physical, cognitive, social, and contextual changes these youth are going through (Simpkins, Fredricks, Davis-Kean, & Eccles, 2005).

Likewise, a study of 50,168 ninth-graders found that students involved in sports and other extracurricular activities (e.g., clubs, volunteer work, band, choir, or music lessons) had significantly higher odds of exercising, doing homework, consuming milk, having a healthy self-image, and had significantly lower odds of emotional distress, suicidal behavior, family substance abuse, consuming alcohol, and physical and sexual abuse victimization (Harrison & Narayan, 2003). In other words, these students were more likely to be engaging in healthy behaviors and less likely to be engaging in maladaptive behaviors. It should be noted that all these studies are correlational in nature

and, thus, it cannot be determined whether extracurricular activity participation led to the healthy outcomes outlined or whether students who chose to engage in extracurricular activities were already engaging in healthier behaviors. While the majority of the research looking at the positive effects of extra-curricular activities on health behaviors obviously focused on sport participation, music education both out of and in-school has the potential to have similar positive benefits.

Summary

Adolescence is a time in life when one faces various deterrents to healthy behavior and development. Increasingly, early adolescents are faced with societal pressures and problems that they have to cope with while still handling the natural transitions that occur during this time in life. As these pressures increase, educators, policymakers, and researchers are attempting to find methods of preventing as well as intervening in the challenges faces by today's youth.

While the literature in the area of music education has grown, particularly in relation to music education and academic achievement, the research has not been rigorous, theory driven, or quasi-experimental in nature. This shortcoming makes it difficult to attribute causal inferences about whether music education increases achievement or whether it is that higher achieving children choose music education. Further, previous research often was not specific to the type of music typically taught within schools (band, choir, orchestra), level of involvement, or duration of participation.

Because of the focus on achievement, there has been little research in the area of music education's effect on health promotion behaviors, positive mental health, or the benefits of music for its own sake. Finding those programs that will promote healthy

behaviors and positive mental health is important as they are likely to influence all other areas of children's functioning (academic, social, emotional, physical) and may help mediate some of the difficulties early adolescents naturally face during this period in life. Thus, the current study examined the effects of early adolescents' participation in music education on their health-enhancing behaviors, adaptive skills, and self-efficacy.

CHAPTER III

METHODOLOGY

Participants

Participants for this study included 207 students from two middle schools in Western Massachusetts. The nonrandom, convenience sample was composed entirely of volunteers. Data were collected during the spring semesters of the 2008 (School A) and 2009 (School B) school years.

The majority of participants came from School A, a middle school in a small town of approximately 17,000. The remaining participants attended School B, located in a small city in Western Massachusetts with an approximate population of 54,000 (U.S. Census Bureau, 2007). While the original intent was to find a matched sample, this did not happen. Instead, the sample was a peer group. Therefore, the research questions were altered to reflect this change. Participation rates for the student populations at each of the middle schools involved are presented in Table I, with a more detailed description provided in Chapter IV.

Table I

Demographics for Participants' Schools of Attendance as of Spring 2009

	Sample Size	Total Population	# of students enrolled in band	# of students enrolled in choir	% Free or Reduced Lunch
School A	152	664	72	121	20.4%
School B	55	698	57	112	30.6%

Note: Data gathered from Massachusetts Department of Education (2009) and from personal communications with band and choir directors at the participating schools.

Students in grades 5 through 8 (ages 10 through 15) were invited to fill out the study questionnaires. Participants included members of the school band or choir program (*n*=120), students who discontinued involvement in the band or choir program (*n*= 24), and peers who were never involved in a school music program (*n*=63). In addition, those students participating were involved, to varying degrees, in the school musical (School B), private music lessons, and community music groups.

The context of the music programs was also important to this study as high quality music programs seem to yield greater outcomes. Information on the programs was obtained from personal communication with the instructors of the band and choir program as well as information contained on the webpage of the school. School A also had a separate webpage devoted entirely to the band and choir programs where much information was obtained.

School A had what many professionals in the music education field would deem a strong music program. In fact, the band program was recommended to this investigator as a quality program by the Massachusetts Music Educators Association. The curriculum

used at the school meets the goals and standards set forth by the National Standards for the Arts, the Massachusetts State Frameworks, the American School Band Director's Association Curriculum and other public school music curricula. Band students in grades 5-8 meet one time per week during school for a group lesson. In addition, students meet daily for 35 minutes for group rehearsals. After school groups (concert band, jazz band) are also available as well as private lessons during the school day. Band homework is assigned on a regular basis. Students participate in several school concerts throughout the year as well as performing for local parades and at district and state festivals and competitions. They have won awards for their accomplishments. Many resources for parents and students are listed on the band website and quarterly newsletters are sent out to friends and parents of the band program. The goals of the program are nicely summed up in the following statement from their website:

> One of my goals as your band director is to provide students opportunities to perform at the State Festivals for Concert Bands and Jazz Ensembles. . . We don't compete against other bands but rather we are offered constructive criticism & praise on our attempts to reach what the nationally recognized adjudicators consider the "State Level." . . . Our curriculum is diverse & based upon meeting the needs of the students. We prepare music that will accent our strengths & develop our weaknesses.

School A also provides general music classes for all grades. Every student enrolled at the school takes a General Music class for one quarter each year in 40 minute blocks. Lessons include standards-based experiences and activities including singing, music reading and notating, playing instruments, improvising and composing, and responding to music. Also available to all students are concert choir (open to all students, no audition required) and hand bell choir (for grades 6-8, meets 1 time per week after school for 90 minutes, no audition required but music reading ability is recommended).

Opus (a select group that rehearses after school one time a week, audition required) is also available. All music options require regular school performances.

School B also has a general music, band, and choir program as well as a yearly musical. The curriculum, similar to School A, follows the National Standards for the Arts and the Massachusetts State Frameworks. School and community performances are part of the curriculum. Students meet weekly for rehearsals; private lessons are available to those who wish to take them, although this is a new part of the program just established in the last year. Private lessons began as a result of a study conducted by a task force commissioned by the district to evaluate the instrumental music program. The task force found that it was difficult to develop the music program if students did not have access to individual instrumental and voice lessons. Thus, while School A's music program is well-established, School B's program is just beginning to grow. Students do not perform at state levels at this point, though that is the hope for the future. The band program at School B is the largest within the district. The choir program was almost double the size of the band program at the time of this study.

Instruments and Measures

The instruments used in this study included a demographic questionnaire (see Appendix A), the *Self-efficacy Scale* (Sherer et al., 1982; see Appendix B), the *Behavior Assessment System for Children, Second Edition Self Report of Personality* (BASC-2 SRP-C or SRP-A depending on the youth's age; Reynolds & Kamphaus, 2004), and the *Health-enhancing Behavior Index* (HEBI; Jessor et al., 1998a; see Appendix C).

Demographic Questionnaire

The demographic questionnaire consisted of a two page form that was completed by each participant. Items included questions about the participant and his/her family members. Demographic variables included age, gender, and grade-level. Students were asked if they participated in their school's free or reduced lunch program in an attempt to match students based upon socio-economic status. Also included were questions regarding current and past musical instruction both in school and out of school, including years and level of involvement. This information was used to define the sample population under investigation and to set guidelines for generalizing results. For the purposes of this study, levels of involvement were modeled after those used by others measuring quantity and quality of extracurricular activities (e.g., Eccles & Barber, 1999; Peck et al., 2008). As such, responses for numbers of years of involvement were divided into four categories where none = no years of involvement, low = 1-3 years of involvement, moderate = 4-6 years of involvement, and high = 7+ years of involvement. Responses for hours of weekly participation were also divided into four categories where none = no participation, Low = 1-3 hours a week, moderate = 4-6 hours a week, and high = 7 or more hours a week. Review of the questionnaire's readability indicated a Flesch-Kincaid Grade Level of 3. Terms that may have been unclear to individual students were clarified, as needed, throughout the testing session.

The Self-efficacy Scale

The *Self-efficacy Scale* (Sherer et al., 1982) is a 30 item health and psychosocial instrument designed to measure general self-efficacy that is not linked to a specific situation or behavior. The measure includes 17 general self-efficacy items, 6 social self-

efficacy items, and 7 unscored filler items. The scale assesses a person's willingness to initiate behavior, willingness to expend energy in completing behaviors, and persistence in the face of adversity. Answers are listed on a five-point Likert scale, with responses ranging from "strongly agree" to "strongly disagree". A high score indicates higher levels of self-efficacy and scores can range from 23 to 115 (Strongly Disagree = 1, Strongly Agree = 5).

Validity of the *Self-efficacy Scale* was determined through a factor analytic study in which a scree test was used to determine the number of factors. Sherer et al. (1982) reported a two-factor solution with items loading at the .40 level or above. The first factor, accounting for 26.5% of the variance, measured general self-efficacy. The second factor, accounting for 8.5% of the total variance, measured efficacy expectancies in social situations. The Cronbach Alpha reliability coefficient for each subscale was .86 and .71, respectively. Sherer et al. determined construct validity by correlating the *Self-efficacy Scale* with several other personality measures such as the *Ego Strength Scale*, the *Interpersonal Competency Scale*, and the *Rosenberg Self-esteem Scale*.

Sherer et al (1982) attempted to establish criterion validity by measuring students past success in vocational, educational, and military settings. Results indicated that participants with the highest scores on the *Self-efficacy Scale* were more likely to be employed, have quit fewer jobs, and less likely to have been fired from work than those with lower scores. General self-efficacy scores were positively correlated with educational level and military rank as well as past success in these areas.

Subsequent research has also attempted to establish the psychometric properties of the Self-efficacy Scale. For example, Imam (2007) found acceptable levels of internal

consistency, temporal stability, and construct validity with a population of 607 University students. Chen, Gully, and Eden (2001) also reported moderate to high (.76 to .89) levels of internal consistency as well as high test-retest reliability. This scale does not appear to have been used as of yet with middle school students.

The Behavior Assessment System for Children, Second Edition (BASC-2)

The BASC-2 (Reynolds & Kamphaus, 2004) is a well-known, multi-method, multidimensional system used by psychologists, educational professionals, physicians, and other clinicians to evaluate children and young adults' self perceptions of their behaviors and emotions. It provides standard scores for both adaptive and maladaptive behaviors and is designed to facilitate differential diagnosis and educational classification of a variety of emotional and behavioral disorders of children and to aid in school intervention. The BASC-2 was chosen for this study because of its partial focus on positive psychological features and skills, its ease of use as a brief self-report measure, as well as its strong psychometric properties.

In general, the scales in the BASC-2 are moderately correlated with each other. When looking at construct validity, the authors report that all factors have scales with moderate to high standardization loadings. The authors utilized two types of factor analysis to develop the composites within the BASC-2. The primary technique used was Covariance Structure Analysis (CSA), which is also known as Confirmatory Factor Analysis. CSA was used to evaluate the hypothesized model and modify it in appropriate ways based upon the analysis. The authors reported a moderately high level of fit. This is consistent with the original BASC (Reynolds & Kamphaus, 1992) and is reportedly typical for behavior rating scales (Greenbaum et al., in Reynolds and Kamphaus, 2004).

The second technique used was principal-axis analysis. The principal-axis analysis supported the structures examined in the CSA. A personal-adjustment factor had moderate or strong loadings for *Relations with Parents*, *Interpersonal Relations*, *Self-esteem*, and *Self-reliance*.

Correlations with several other self-report scales (e.g., *ASEBA Youth Self-report Form, ASEBA Young Adult Self-report Form, Conners-Wells' Adolescent Self-report Scale, Children's Depression Inventory, Revised Children's Manifest Anxiety Scale, Brief Symptom Inventory, Beck Depression Inventory-II, Minnesota Multiphasic Personality Inventory-2TM,* and the original *BASC Self-report of Personality*) were also assessed, as were correlations between students' self report and teachers' and parents' reports. In general, teachers' behavior ratings and students' self reports showed low levels of agreement while individual self reports correlated moderately with parent ratings. The authors noted that the validity of the self-report was supported by the expected negative correlation between the adaptive and clinical scales and by the positive correlation between similar scales (Reynolds & Kamphaus, 2004).

Parent and teacher's can and do provide valuable insight into youth's behavioral and adaptive functioning. Adolescents may, however, often be more aware than others of their thoughts, feelings, and attitudes, especially if they choose not to talk about these feelings with their parents and teachers. Adolescent self-perceptions are important because they may influence the youth's behavior and emotional well-being, whether or not the perceptions are accurate. Thus, the scope of this research focused on youth's perceptions, making the use of the self-report the appropriate choice. Further, while the SRP-A and SRP-C evaluated both adaptive as well as maladaptive dimensions, this

research primarily focused on adaptive skills. Thus, even though students filled out the entire measure, only responses related to positive behaviors and skills were analyzed and reported in Chapter IV.

As mentioned, the BASC-2 includes separate rating scales for parents, teachers, and students, but for the purposes of this study, only the *Self-report of Personality* (SRP) scale was used. This specifically included forms SRP-C (for children aged 8-11) and SRP-A (for children aged 12-21), depending on the age of the youth. The SRP-A checklist is comprised of 176 items with several subscales, while the SRP-C has 139 items. Students answer the questions in one of two ways. The first set of items requires a true or false response. The remaining items require students to rate themselves on a four-point scale of "never," "sometimes," "often," and "almost always." Both forms of the SRP take approximately 20-30 minutes to complete and are written at a 3rd grade reading level.

The SRP-C and SRP-A have identical composite scales. For the purposes of this study, the *Personal Adjustment Composite* (PAC) were used. The PAC is a measure of overall adaptive behavior, and is comprised of *Interpersonal Relations, Relations with Parents, Self-esteem,* and *Self-reliance*. The *Interpersonal Relations* scale assesses the student's reports of success in relating to others and the amount of enjoyment the student gains from the interaction. The *Relations with Parents* scale looks at the student's perception of being important in his or her family, the status of the parent-child relationship, and the child's perception of the amount of parental trust and concern. The *Self-Esteem* scale assesses a student's self-satisfaction both physically and more globally. Students who score high on this scale (as defined below) are generally seen as "warm,

open, venturesome, and self assured. They typically have good peer relations, a positive sense of their identity, and appropriate levels of ego strength" (Reynolds & Kamphaus, 2004, p. 79). The *Self-reliance* scale examines a student's self-confidence and assurance in his or her ability to make decisions, a strong indicator of personal adjustment. Students who score high on this scale tend to take on responsibility and often have the ability to "face life's challenges" (Reynolds & Kamphaus, p. 79). They are not fearful of their emotions, but rather have their emotions well controlled.

Standard scores for both versions of the SRP ranged from 10 to 90+. For the adaptive scales, a T-Score of 41 or higher indicated that a student had average to high levels of the particular skill measured. The higher the score, the stronger the student was in that area. Scores of 31-40, placed the student at a level of mild to moderate difficulties in the area measured. Scores below 31 indicated that the student had significantly less skills in that area than most other students his or her age from the standardization sample.

The coefficient alpha internal-consistency reliabilities of the PAC reported in the manual were in the upper .80s. Reliabilities for the individual scales were in the middle .70s to lower .80s, with *Self-reliance* being slightly lower. The composite scales' test-retest reliabilities were generally in the upper .70s to low .80s. For the individual scales, test-retest reliability was in the low to mid .70s. The test-retest correlations are lowest at the child level.

The Health-enhancing Behavior Index

The HEBI (Jessor et al., 1998a) is a self-report measure of behaviors associated with good health in adolescents (see Appendix C). The questionnaire was designed for research purposes and measures five areas of health-enhancing behavior: healthy diet,

regular exercise, adequate sleep, good dental hygiene, and regular seatbelt use. The five categories are summed to obtain a composite score.

Healthy diet (alpha = .88) is a nine-item scale which includes both specific and general questions about eating patterns. Responses are recorded on a three-point rating scale. *Regular exercise* (alpha = .70) is a four-item scale that examines the extent the early adolescent is involved in physical exercise such as sports. Responses are recorded on a six-point scale. *Adequate sleep* (alpha = .80) is measured by averaging the responses to two questions regarding sleep patterns. These questions are presented in a multiple-choice format. *Good dental hygiene* (alpha = .57) is a three-item scale that looks at the frequency of good dental practices. Dental hygiene questions are answered on a four-point rating scale. *Seatbelt use* (alpha = .93) measures when and how often respondents use seatbelts. Responses are recorded on a four-point scale. The seatbelt use scale contains two items that are developmentally inappropriate for the early adolescents in this study ("When driving by yourself do you use a seatbelt?" and "When you're driving with a friend in your car, do you use your seatbelt?"). These items were replaced with questions that more accurately reflected the maturational level of the students in the study: "When you're riding your bike, do you wear a bicycle helmet?" and "When you're skateboarding, rollerblading, or inline skating, do you wear protective gear (e.g., helmet, knee and elbow pads, padded gloves)?"

The factor structure of the five subscales was calculated using principal-axis factoring using squared multiple correlations as communality estimates. In one study, one factor had an eigenvalue of 1.59 with the other factors having eigenvalues ranging from .67 to .99 (Jessor et al., 1998a). This study supported the presence of one common factor.

A second similar study involving middle and high school students reported loadings that supported a structure with more than one common factor (Donovan, Jessor, & Costa, 1993). Factor loadings were .71 for healthy diet, .36 for dental hygiene, .35 for exercise, .26 for seatbelt use, and .23 for adequate sleep. Jessor et al. (1998a) concluded that the composite should be considered a cumulative index rather than a scale of parallel items. For the purposes of this research, the composite score was used as an overall measure of health-enhancing behaviors.

The stability of the HEBI across a one year interval was reported to be substantial (.62 in a U.S. sample and .51 in a sample from China; Turbin et al., 2006). Further, the correlation of the HEBI with a self-rating of general health was significant (.27 and .25 in the U.S. and China samples, respectively).

The scoring of the HEBI consisted of a 3 point scale for *Diet* (0-2), a 6 point scale for *Exercise* (0-5), and a 4 point scale for *Safety* (0-3). On the *Safety* index, if a participant indicated that they did not ride a bike or rollerblade, they were given an average score based upon their responses to the preceding *Safety* questions. The *Sleep* index score was calculated according to the number of hours of sleep per night where 0-4 hours was a score of 1, 5-7 hours was a score of 2, and 8 or more hours of sleep per night was a score of 3.

The HEBI was developed specifically for use with adolescents for research purposes. It also measures several dimensions of health behavior that have been reported in the literature as being important to wellness (e.g., diet, exercise, safety). For these reasons, it was selected as the instrument of choice for this study.

Data Collection Procedures

Prior to data collection, this research was submitted for approval to the University of Northern Colorado's Internal Review Board (IRB; see Appendix D). Written permission was also obtained from the authors of the *Self-efficacy Scale* and the HEBI for use in the study (see Appendix E). This permission was necessary because these assessments were not published and were only available for research purposes at the discretion of the authors. Authors also supplied background and scoring information for the scales that were necessary for their use.

Upon approval from the IRB and the assessment authors, emails were sent to music directors of local music schools and colleges as well as to the Massachusetts Music Educators' Association to obtain information regarding middle school music programs in the Western Massachusetts area that might be willing to participate in the study. These professionals were asked for their expertise, as they were deemed to be leaders in the field of music education and would have the most up-to-date and valuable information as to the quality music programs in the area. In particular, these professionals were asked for their recommendations of music programs that they considered to be strong, based upon factors such as program support by administration and the community, time allocated during the school day for band/choir, curriculum alignment with National and State Standards, percentage of the student population enrolled in and remaining in band/choir over the course of middle school, and consistent performance by music students at local, state, and national levels.

Recommended schools were contacted as to their willingness and availability to participate in the current study. Due to busy state testing and music performance

schedules, several schools were unavailable to participate. One school (School A) agreed, though. The school district's superintendent and building principal were contacted to obtain approval for conducting research within their school building (see Appendix F). Upon the request of the principals, the music teachers within the building were also contacted for their permission and to discuss logistical coordination of the data collection. Verbal and written permission was obtained from the music teacher and the building principal.

Since the strength of this study was deemed to be less than optimal with the participation of only one school district, letters were again sent out to area schools. Following the second round of requests, one more district agreed to participate. The superintendent of the district provided written permission for the two middle schools in the district to participate. He also spoke to the principals and received their verbal consent and told this writer to contact the principals. Both principals were contacted and written permission forms were sent for signatures of the principals. Unfortunately, only one of the principals responded back to this investigator. Thus, the study moved ahead with the participation of Schools A and B. The principal of School B provided the name of a contact person within the school to coordinate data collection.

Upon approval by the participating schools, consent forms were sent home with students via their teachers to obtain parental permission to participate in this study (see Appendix G). Once signed, the form was sent back to school with the child and passed on to the principal investigator by the teachers. Students agreeing to participate were given passes to the school library on the day the surveys were to be passed out. The date and time of data collection was worked out collaboratively with the teachers so as to not

interfere with essential academic time. Only students with signed parent permissions were allowed in the library to participate. Students were given an assent form to sign before completing any measures (see Appendix H). Consent/assent forms explained the nature of the activities, confidentiality, and that participation was voluntary. These concepts were verbally reiterated to students by this writer prior to obtaining students' assent and prior to collecting any data.

Once consent and assent were obtained, each participating student was given a packet (manila envelope) containing the questionnaires to be answered. Directions were read aloud by the principal investigator who remained in the room while the questionnaires were filled out in order to answer questions and help maintain confidentiality of students' responses. Most students completed the surveys within 45 minutes. A few students required up to 15 minutes of extra time beyond when the others were finished. One student was allowed a piece of paper to help him track where to put the responses on the paper (for the BASC-2), as he was visibly struggling. Other students appeared to tire, but were able to return to the task when prompted (e.g., asked if they needed a break).

Upon completion, students were asked to return the questionnaires to the manila envelope and were allowed to return to class. Students were verbally thanked as they left and also received a small gift (a pencil) as a thank you for their participation. Three students elected to not fill out the questionnaires after originally consenting to participate.

Participants' responses were kept anonymous and confidential to the maximum extent possible. For example, students were instructed not to put identifying information

on any of the measures. Instead, numerical identifiers were used for coding purposes. The numerical identifiers were random, thus lessening the potential that they could be traced back to the original source. All data were kept in a locked file cabinet, with access granted only to the principal investigator and the research committee. Further, data were combined and presented only in summary form.

Data Analyses

Cronbach's Alpha was used to determine internal consistency specific to this study's participant pool for all assessment measures except the demographic questionnaire. The following statistical procedures were used to examine the research questions: review of descriptive statistics, frequency counts, comparison of Means, Chi-square tests of association, one-way Analysis of Variance (ANOVA), and multiple linear regression. Rationale for use of the statistical procedures above, discussion of assumptions, and results are presented in Chapter IV of this manuscript. All statistics were calculated using the Statistical Package for the Social Sciences (SPSS).

CHAPTER IV

RESULTS

Demographics and Descriptive Statistics

The primary purpose of this study was to examine the relationship between music education participation and several areas of early adolescent functioning (self-efficacy, adaptive skills, and health behaviors). This chapter reviews descriptive analyses of the demographic characteristics and the results specific to the research questions under investigation.

Of the 600 middle school students asked to participate in the current study, 209 (34.8%) agreed; 154 from School A and 55 from School B. From this pool, 2 packets from School A were discarded because all the required instruments were not completed. Thus, complete packets of questionnaires were collected from 152 students from School A and 55 from School B. This yielded a total sample of 207 participants.

In order to verify that students from each school were comparable in terms of key demographic variables and could be combined into one group, chi-square tests of association were run for the demographic variables of age, grade, and socio-economic status (as measured by students' eligibility for free or reduced price lunch). Results indicated that students did differ significantly from each other on all variables; age, χ^2 (5, N = 207) = 15.69, p = .008; gender, χ^2 (1, N = 207) = 7.21, p = .007; grade, χ^2 (3, N = 207) = 32.403, p < .001 and socio-economic status, χ^2 (1, N = 205) = 9.017, p = .003.

Due to the significant differences between school demographics, participants could not be collapsed into one total group for data analysis. Thus, all data were analyzed and reported separately for each of the schools.

Frequency counts and descriptive statistics were examined for each of the schools. Demographic characteristics of the participants are presented in Table II. In general, the final sample consisted of 79 males and 73 females from School A and 17 males and 38 females from school B. The mean age of the School A sample was 12.5 and the group ranged from 10 to 15 years old. For School B, the mean age was 12.7 and the group ranged from 11 to 14 years old.

The structure of the middle school also differed between schools. School A educates students from grades 5 through 8 while School B educates students from Grades 6 through 8 at the middle school level. Of the students who participated from School A, 19.7% were finishing Grade 5, 14.5% Grade 6, 32.2% Grade 7, and 33.6% Grade 8. From School B, 47.3% were finishing Grade 6, 18.2% were finishing Grade 7, and 34.5% were finishing Grade 8.

Students were also asked about socioeconomic status, as determined by eligibility for free or reduced lunch. For the School A sample, 18 students (11.8%) reported receiving free or reduced lunch. For the School B sample, 16 students (29.1%) reported receiving free or reduced lunch. These levels are relatively comparable to the overall socio-economic status of the schools that the samples came from, as reported in Table I.

Table II

Demographic Characteristics of Participants

		School A	School B
		Freq. (%)	Freq. (%)
Grade			
	5	30 (19.7%)	0 (0.0%)
	6	22 (14.5%)	26 (47.3%)
	7	49 (32.2%)	10 (18.2%)
	8	51 (33.6%)	19 (34.5%)
Age			
	10	9 (5.9%)	0 (0.0%)
	11	30 (19.7%)	7 (12.7%)
	12	28 (18.4%)	21 (38.2%)
	13	49 (32.2%)	11 (20.0%)
	14	32 (21.1%)	16 (29.1%)
	15	4 (2.6%)	0 (0.0%)
Gender			
	Male	79 (52.0%)	17 (30.9%)
	Female	73 (48.0%)	38 (69.1%)
Free / Red. Lunch			
	No	133 (87.5%)	38 (69.1%)
	Yes	18 (11.8%)	16 (29.1%)
	No Response	1 (0.7%)	1 (1.8%)

In regards to music education, participants included those students currently participating in only the school band or choir program (*n*=63 for School A and 30 for School B), those who currently participate in only out of school music groups and / or private lessons (*n*=6 for School A and 1 for School B), and those who currently participate in both in-school and out-of-school music education (*n*=19 for School A and 11 for School B). For the purposes of this study, students who had only participated in out-of-school music were dropped from analysis. This group did not seem to fit clearly

into either group. They were plainly involved in music programming; sometimes fairly extensively. However, they were not school music participants, which was the basis of this study. The school music only group and the school and outside music group were combined into one group of school music participants. A review of the type of music education that the students from the sample were participating in out of school revealed that it primarily related to in-school music. For example, students engaged in private lessons for the instrument they played in school band. Thus, it seemed acceptable to combine these two groups.

Data were collected on students who had participated in music education (both in and out of school) in the past but were not currently involved. A review of the characteristics of the students who discontinued music participation revealed that their involvement had been minimal (less than a year). Due to the nominal music participation and low sample size of discontinuers (n=26 between schools A and B), it was decided to combine these students with the non-participant group. Thus, final groups consisted of the following: students currently participating in the school band or choir program (n=82 for School A and 41 for School B) and students who did not participate in school band or choir (n=64 for School A and 13 for School B).

Depth and breadth of participation was also examined, as the literature points to the possible importance of these factors on positive outcomes for youth. Of the students who were involved in music programming, the majority of the current sample were engaged in “low” levels of participation. Specifically, 72% and 87.8% of music students in the sample from Schools A and B, respectively, participated in band or choir for 1 to 3 years. Participants from the School A sample participated in music related activities for

varying hours per week with 50% participating for 1-3 hours, 37.8% participating for 4-6 hours, and 12.2% participating for 7 or more hours. Participants from School B were engaged in school music activities for the following hours each week: 1-3 hours (low levels), 41.4%; 4-6 hours (moderate levels), 29.3%; 7 or more hours (high levels), 29.3%.

Table III

Participation in School Based Music Education (including non-participants)

		School A	School B
		Freq. (%)	Freq. (%)
Duration			
	None	64 (43.8%)	13 (24.1%)
	Low (1-3 years)	59 (40.4 %)	36 (66.7%)
	Mod (4-6 years)	21 (14.4%)	4 (7.4%)
	High (7+ years)	2 (1.4%)	1 (1.9%)
Hours per Week	None	64 (43.8%)	13 (24.1%)
	Low (1-3 hours)	41 (28.1%)	17 (31.5%)
	Mod (4-6 hours)	31 (21.2%)	12 (22.2%)
	High (7+ hours)	10 (6.8%)	12 (22.2%)

Just as it was necessary to compare schools in regards to demographic variables, music participants and non-participants were compared in terms of age, grade, gender, and SES in order to determine if they represented a matched sample. Chi-square tests of association were conducted for music participants and non-participants from School A. Significant differences were apparent between music participation and grade, χ^2 (3, N = 146) = 63.12, $p < .001$; age, χ^2 (5, N = 146) = 50.53, $p < .001$; and gender, χ^2 (1, N = 146) = 9.017, $p < .001$. Significant differences in terms of eligibility for free or reduced lunch were not found between the music and no music groups, χ^2 (1, N = 146) = .36, $p = .55$.

In terms of grade, participants included in the music group tended to be spread across Grades 5 (n=30), 6 (n=22), 7 (n=14), and 8 (n=16). Participants in the no music group, conversely, were solely in Grades 7 (n=32) and 8 (n=32). Consequently, a similar trend was found for age where participants from the music group ranged from 10 years to 14 years while participants in the no music group were older (12 to 15 years old). Further, those students who participated in music education from the sample were more likely to be female (n= 51 female versus 31 male), while those in the non-music group tended to be male (45 male vs. 19 female). Because participants in the music and no music groups differed on the above demographic variables, any significant findings should be interpreted with caution.

Chi-squares of association were repeated for School B. In this case, significant differences between the music group and no music group were not apparent for any demographic variable measured; grade, χ^2 (2, N = 54) = 3.33, p < .19; age, χ^2 (3, N = 54) = 3.8, p =.28; gender, χ^2 (1, N = 54) = .39, p = .53; or SES, χ^2 (1, N = 53) = .41, p = .52. Thus, these two groups do seem to represent a matched sample for the demographic variables measured. It should be noted, though, that due to low sample size and subsequent low power, the likelihood of finding a statistical difference was reduced.

Preliminary Analyses

Prior to conducting the statistical procedures necessary to answer the research questions, characteristics inherent to the instruments used were examined for the participants in this study to establish that the measures were appropriate. Descriptive statistics for the scales are outlined in Table IV.

Cronbach alpha values were calculated for each applicable instrument. In regards to the *Self-efficacy Scale,* Cronbach alpha values of .84 and .85 were obtained for Schools A and B, respectively. Utilizing the standard established by Nunnally (1978) where a .70 level is acceptable, the *Self-efficacy Scale* was found to be a reliable scale for both samples.

For the *Health-enhancing Behavior Index* (HEBI Composite), Cronbach alpha values of .74 and.72 were obtained for Schools A and B. These were, again, acceptable levels. Thus, the HEBI was also found to have internal consistency for these samples when not utilizing the sleep subscale. Due to the weakness of the *Sleep* subscale, which only had two items (bed time and wake up time), it was not included in the reliability analysis. Because of these concerns, it was also removed from the HEBI composite for all subsequent statistical tests. Thus, the final scale included 9 diet items, 4 activity items, and 4 safety items.

Finally, alpha reliabilities were computed for the *Personal Adjustment Composite* of the *Behavior Assessment System for Children, Second Edition*. Again, acceptable levels of reliability were found, with Cronbach alphas calculated as .856 and .862 for Schools A and B, respectively.

Table IV

Descriptive Statistics for Instruments

		Possible Range	Sample's Range	Music	No Music	Total
School A				(*n* = 82)	(*n* = 64)	(*N* = 146)
	Self-eff. Scale	23-115	37-110	85.14 (13.18)	79.94 (13.04)	82.87 (13.33)
	BASC-2 PAC	10-90	10-67	50.42 (9.74)	48.47 (9.68)	49.54 (9.72)
	HEBI Comp	1-53	7-45	27.31 (7.12)	24.82 (6.50)	26.22 (6.95)
School B				(*n* = 41)	(*n* = 13)	(*N* = 54)
	Self-Eff. Scale	23-115	53-111	85.56 (13.87)	80.62 (13.09)	84.37 (13.73)
	BASC-2 PAC	10-90	16-69	49.63 (12.02)	41.85 (11.54)	47.76 (12.27)
	HEBI Comp	1-53	13-43	27.61 (6.77)	22.08 (6.47)	26.28 (7.05)

Note: Numbers in parentheses represent standard deviations.

Analyses for Research Questions

A variety of statistical procedures were conducted in order to answer the research questions. These included frequency counts, descriptive statistics, comparison of means, chi-square tests of association, independent samples *t*-tests, and multiple regression. In general, an alpha level of .05 was set for the statistical procedures listed. However, multiple tests and multiple comparisons were made using data from the same sample and the same instruments. As the use of multiple tests and multiple comparisons could inflate

the risk for Type I error, adjusted alpha levels were applied in some instances to reduce this risk. The situations in which these adjustments were applied are noted throughout Chapter IV in conjunction with the applicable research questions and procedures.

Research Question #1

> Q1. Do young adolescents who participate in in-school music education demonstrate higher levels of health-enhancing behaviors (as measured by the HEBI Composite) than a sample of their peers who do not participate in in-school music education?

The first research question was evaluated through the use of an independent samples *t*-test, a statistical measure that tests whether the means of two groups are statistically different from each other. Before a *t*-test can be run, certain assumptions must be determined to have been met. For the independent samples *t*-test, this includes the assumptions of independence, normality of the dependent variable, and equality of variance. Because students participated in the same music program and came from the same school, the assumption of independence was likely not met. The biggest concern with a violation of independence is the increased risk of Type I error. Thus, a more conservative alpha level of .01 was used for analyses to reduce this risk (S. Hutchinson, personal communication, June 5, 2009).

The assumption of normality was examined through a review of descriptive statistics. For the test using HEBI Composite scores for School A, coefficients of skewness for the *t*-test (-.16 for the music group, .08 for the no music group, -.02 for the total sample) fell within the acceptable range of -1 to 1, and coefficients of kurtosis (.85 for the music group, .12 for the no music group, .44 for the total sample) fell within the acceptable range of -1 to 2 (Huck, 2004). Likewise, coefficients of skewness (.09 for the music group, .54 for the no music group, .14 for the total sample) and kurtosis (-.64 for

the music group, -.47 for the no music group, -.71 for the total sample) fell within normal limits for School B.

Finally, the assumption of equal variances can be assumed to have been met for the test using HEBI composite scores for School A, as evidenced by non-significant results on Levene's test for equality of variances, F (136) = .198, p = .657. Similarly, the assumption of equal variances was also met for the test using HEBI Composite scores for School B, based upon results from Levene's test, F (52) = .034, p = .855. An adjusted alpha level of .01 was applied to the *t*-tests due to the use of multiple tests and the violation of the independence assumption.

For the test using HEBI Composite scores for School A, mean scores were 27.31 (*SD* = 7.12) for the music group and 24.82 (*SD* = 6.50) for the no music group. Results from this first independent samples *t*-test failed to find significant differences between school music participants and non-participants, t (136) = -2.11, p = .036, with an alpha level of .01. For School B HEBI Composite scores, the mean score for the music group was 27.61 (*SD* = 6.77) and for the no music group was 22.08 (*SD* = 6.47). Results from this test were significant with an alpha level of .01, t (52) = -2.59, p = .01. Using Cohen's (1988) guidelines for the social sciences, where d= 0.1 is a small effect size, d = 0.5 is a medium effect size and d = 0.8 is a large effect size, the strength of the relationship found was large (d = .84).

Results from the *t*-tests indicate that music students from school B included in this study received significantly different HEBI composite scores, suggesting statistically different levels of health-enhancing behaviors. Specifically, music students evidenced significantly higher levels of health behaviors (healthy diet, exercise, and safety

behaviors) than those students who did not participate in school music. The strength of this relationship was large. This finding is consistent with prior research that has found correlations between other pro-social activities (e.g., sports, volunteer work, band, choir) and health behavior (e.g., Jessor et al, 1998a; Harrison & Narayan, 2003; Rainey et al., 1998; Walsh, 1985).

Research Question #2

> Q2. Do young adolescents who participate in music education demonstrate higher levels of adaptive skills (as measured by the *Personal Adjustment Composite*) than a sample of their peers who do not participate in music education?

The second research question was also determined to be best evaluated through the use of an independent samples *t*-test. The goal this time was to compare mean adaptive behavior scores, as measured by the *Personal Adjustment Composite* (PAC) of the *Behavior Assessment System for Children, Second Edition*, for the music and no music groups. Again, as described above, assumptions were examined. The assumption of independence was not met for the same reasons as in Research Question #1. Thus, an adjusted alpha of .01 was used to reduce risk of Type I error.

The assumption of normality was examined through a review of descriptive statistics. For the test using PAC scores for School A, coefficients of skewness for the *t*-test (-1.48 for the music group, -.84 for the no music group, -1.16 for the total sample) did not fall within the acceptable range of -1 to 1 for the music group and the total group. Similarly, coefficients of kurtosis (3.43 for the music group, -.13 for the no music group, 1.59 for the total sample) fell outside the acceptable range of -1 to 2 (Huck, 2004) for the music group. Research has shown that violating the normality assumption for 2-tailed *t*-tests has no practical consequence (Glass & Hopkins, 1996), as the risk of Type I or Type

II error is reported to be negligible. Thus, this does not appear to be of concern. Coefficients of skewness (-.60 for the music group, .02 for the no music group, -.40 for the total sample) and kurtosis (.10 for the music group, -1.01 for the no music group, -.43 for the total sample) fell within normal limits for School B.

Finally, for this *t*-test, the assumption of equal variances can be assumed to have been met for the test using PAC scores for School A, as evidenced by non-significant results on Levene's test for equality of variances, F (129) = .485, p = .487. Similarly, the assumption of equal variances was also met for the test using PAC scores for School B, based upon results from Levene's test, F (52) = .008, p = .928. An adjusted alpha level of .01 was applied to the *t*-tests due to the use of multiple tests and the violation of the independence assumption.

For the test using PAC scores for School A, mean T-scores were 50.42 (*SD* = 9.74) for the music group and 48.47 (*SD* = 9.68) for the no music group. Thus, overall, both music participants and non-participants evidenced average to high levels of adaptive behaviors. Results from this independent samples *t*-test were not significant; t (129) = -1.139, p = .257, with an alpha level of .01. For School B PAC scores, the mean T-score for the music group was 49.63 (*SD* = 12.02), and for the no music group was 41.85 (*SD* = 11.54). These are, again, average level T-scores. Results from this test were also not significant with an alpha level of .01, t (52) = -2.054, p < .045. Results from both *t*-tests indicate that, overall, music students from both schools included in this study received similar PAC scores, suggesting comparable levels of adaptive behaviors (including relations with parents, interpersonal relations, self-esteem and self-reliance), regardless of music participation. This result is in contrast with the available evidence linking

participation in extracurricular activities to such constructs as self-esteem (Eccles & Barber, 1999) and pro-social behaviors (Zaff et al., 2003). It is also in contrast to research finding a correlation between participation in extracurricular activities, to include band and choir, and the lack of maladaptive behaviors such as skipping schools, fighting, vandalism and smoking (Harrison & Narayan, 2003).

Research Question #3

> Q3. Do young adolescents who participate in music education demonstrate higher levels of self-efficacy (as measured by the *Self-efficacy Scale*) than a sample of their peers who do not participate in music education?

The third research question was, similarly, evaluated through the use of an independent samples *t*-test. The goal of this analysis was to evaluate differences in Self-efficacy levels, as measured by the *Self-efficacy Scale*, for the music and no music groups. Again, as described in research question #1, assumptions were examined and the assumption of independence was not met.

The assumption of normality was examined through a review of descriptive statistics. For the test using *Self-efficacy Scale* composite scores for School A, coefficients of skewness (-.48 for the music group, -.76 for the no music group, -.55 for the total sample) and kurtosis for the *t*-test (-.39 for the music group, 1.93 for the no music group, .57 for the total sample) fell within the acceptable range of -1 to 2 (Huck, 2004). Similarly, coefficients of skewness (-.571 for the music group, -.468 for the no music group, -.491 for the total sample) and kurtosis (-.018 for the music group, -.149 for the no music group, -.185 for the total sample) fell within normal limits for School B.

The assumption of equal variances was also assumed to have been met for the test using *Self-efficacy Scale* scores for School A, as evidenced by non-significant results on

Levene's test for equality of variances, F (140) = .465, p = .497. Similarly, the assumption of equal variances was also met for the test using *Self-efficacy Scale* scores for School B, based upon results from Levene's test, F (52) = .004, p = .948. An adjusted alpha level of .01 was applied to the *t*-tests due to the use of multiple tests and the lack of independence.

For the test using *Self-efficacy* scores for School A, mean scores were 85.14 (*SD* = 13.18) for the music group and 79.94 (*SD* = 13.04) for the no music group. Results from this independent samples *t*-test failed to produce significant differences between school music participants and non-participants, t (140) = -2.34, p = .021, with an alpha level of .01. For School B, *Self-efficacy Scale* scores, the mean score for the music group was 85.56 (*SD* = 13.87), and for the no music group was 80.62 (*SD* = 13.09). Results from this test were also not significant with an alpha level of .01, t (52) = -1.135, p = .262. Thus, students at both schools evidenced relatively similar levels self-efficacy regardless of music participation.

While the connection between music education and/or extracurricular activities and self-efficacy had not been previously examined, several researchers have noted a relationship between self-efficacy and health behaviors (e.g., exercise, diet, dental health) and lower levels of maladaptive behaviors (e.g., smoking, violence, alcohol use). The current research did not support a positive connection between music participation and self-efficacy score for either school.

Research Question #4

Q4. What is the nature of the relationship between early adolescents' healthy behaviors, adaptive skills, and self-efficacy as measured by the HEBI Composite, the PAC, and the *Self-efficacy Scale* composite?

Pearson product-moment correlations were used in the analysis for the fourth research question with alpha set at a .05 level of significance. Table V summarizes the results of this analysis. Overall, significant positive correlations were found between students' adaptive behaviors, health-enhancing behaviors, and self-efficacy for School A at the p <.001 level of significance. Participants scoring higher in health behaviors were also likely to receive higher PAC scores and *Self-efficacy Scale* scores. Similar relationships were found for the School B sample. For School B scores on the *Self-efficacy Scale* and the HEBI were correlated at a p = .001 level of significance. The PAC and the *Self-efficacy Scale* were correlated at a p < .001 level of significance. Finally, the PAC and the HEBI scores were positively correlated at a p = .007 level of significance. These relationships are in alignment with prior research connecting these constructs (e.g., Stewart et al., 1999; Tedesco et al., 1993). While these scales are related, they do appear to be measuring slightly different constructs.

Table V

Correlations between Independent Variables

	HEBI Composite	Self-efficacy Scale	Personal Adjustment Composite
	School A / B	School A / B	School A / B
HEBI Composite	1.00	.366** / .441**	.311** / .362**
Self-efficacy Scale	.366** / .441**	1.00	.487** / .721**
Personal Adjustment Composite	.311** / .362**	.487** / .721**	1.00

*Note: **significant at a .01 level*

Research Question #5

Q5. What is the nature of the relationship between early adolescents' gender, years of music education, and level of music participation in relation to their health-enhancing behavior, as measured by the HEBI Composite?

A multiple linear regression analysis was used in the analysis for the fifth research question. Multiple Linear Regression was chosen for this analysis as it is useful in predicting levels of a dependent variable using numerous independent variables (Glass & Hopkins, 1996). The HEBI composite score served as the dependent variable and gender, years of music education, and level of music participation served as the independent variables. Only students participating in music education were included in this analysis. The goal was to find out what, if any, role gender and depth and breadth of music participation play in health behaviors.

Normal probability plots (P-P Plot), histograms, and residual plots were generated to test the assumptions for linear regression. The normal probability plots and histograms for HEBI Composite scores for both schools suggested generally normal distributions, with a small degree of negative skewness for residuals for School A. Overall, the assumption of normality appeared to have been satisfied. In addition, residual plots were generally indicative of linear relationships and equal variances. As previously mentioned, the assumption of independence was not met, as participants came from the same school and music program. Due to this, an adjusted alpha of .01 was used for this analysis in order to reduce the risk of Type I error.

Ultimately, analysis revealed that the independent variables only explained about 6% of the variance in HEBI composite scores for School A ($R^2 = .06$), which is not significant, $F\ (3,77) = 1.426$, $p = .242$. Thus, it appears that gender, years of music

education, and levels of music participation neither contribute toward nor detract from health-enhancing behaviors for the School A sample. Similar results were found for School B. Analysis revealed that 21.2% of the variance in HEBI composite scores was explained by the independent variables; R^2 =.212; F (3, 40) = 3.325, p = .030, which was not significant at a p = .01 level of significance. This finding is in contrast to research by Fredricks and Eccles (2006) who noted the importance of length and breadth of participation in determining positive outcomes in extracurricular activity involvement. However, given that the majority of Sample B only participated in music for 1 to 3 years and given the small sample size, this lack of significance was not surprising.

Research Question #6

Q6. What is the nature of the relationship between early adolescents' gender, years of music education, and level of music participation in relation to their adaptive skills?

A multiple linear regression statistical procedure was used in the analysis for the sixth research question. For this analysis, the PAC score served as the dependent variable and gender, years of music education, and level of music participation served as the independent variables. Only students participating in music education were included in this analysis. The goal of this analysis was to find out what, if any, role gender and depth and breadth of music participation play in overall adaptive behaviors.

Normal probability plots (P-P Plot), histograms, and residual plots were generated to test the assumptions for linear regression. The normal probability plots and histograms for PAC scores for both schools suggested generally normal distributions, with a small degree of positive skewness for residuals for School A. Overall, the assumption of normality appeared to have been satisfied. In addition, residual plots were generally

indicative of linear relationships and equal variances. As previously mentioned, the assumption of independence was not met as participants came from the same school and music program. Due to this, an adjusted alpha of .01 was used for this analysis in order to reduce the increased risk of Type I error.

Ultimately, analysis revealed that the independent variables only explained about 2% of the variance in PAC composite scores for School A ($R^2 = .02$), which is not significant, F (3,71) = .362, p = .781. Thus, it appears that gender, years of music education, and levels of music participation neither contribute toward nor detract from adaptive behaviors for the School A sample. Similarly, for School B analysis revealed that 22% of the variance in PAC scores was explained by the independent variables; R^2 = .22; F (3, 40) = 3.47, p = .026, which was not significant at a .01 level of significance. This was not surprising considering the lack of significant results for music and non-music participants in regards to adaptive behaviors found above.

Research Question #7

> Q7. What is the nature of the relationship between early adolescents' gender, years of music education, and level of music participation in relation to their self-efficacy, as measured by the *Self-efficacy Scale*?

A multiple linear regression analysis was used in the analysis for the seventh research question. For this analysis, the *Self-efficacy Scale* composite score served as the dependent variable and gender, years of music education, and level of music participation served as the independent variables. Only students participating in music education were included in this analysis. The goal of this analysis was to find out what, if any, role gender and depth and breadth of music participation play in self-efficacy levels.

Normal probability plots (P-P Plot), histograms, and residual plots were generated to test the assumptions for linear regression. The normal probability plots and histograms for *Self-efficacy Scale* scores for both schools suggested generally normal distributions. Overall, the assumption of normality appeared to have been satisfied. In addition, residual plots were generally indicative of linear relationships and equal variances. As previously mentioned, the assumption of independence was not met as participants came from the same school and music program. Due to this, an adjusted alpha of .01 was used for this analysis in order to reduce the risk of Type I error.

Analysis revealed that the independent variables only explained about 5% of the variance in Self-efficacy Scale scores for School A ($R^2 = .05$), which is not significant, $F(3,79) = 1.256$, $p = .295$. Similarly, this study failed to find significant results for School B; $R^2 = .162$; $F(3, 40) = 2.393$, $p = .084$. Thus, it appears that gender, years of music education, and levels of music participation neither contribute toward nor detract from self-efficacy. Considering the lack of significant findings between music participation and self-efficacy found about for both schools, this result was not surprising.

CHAPTER V

DISCUSSION

Summary of Research Findings

Understanding factors related to wellness in adolescence is critical. Developmentally, adolescence is a time when one faces various deterrents to healthy behavior and growth. Further, it is a stage in life when youth are faced with societal pressures with which they must learn to cope. As such, researchers and practitioners alike are trying to find ways to bolster the resilience of adolescents to the challenges of everyday life.

The purpose of this study was to explore factors specific to music education that may impact wellness in youth. In particular, this study looked at the relationship between in school music participation and adolescents' health behaviors, adaptive behaviors, and self-efficacy. Depth and breadth of participation, as it relates to the above constructs, was also explored. It was hoped that, through a better understanding of the connection between music education and wellness, educators would be provided with an additional method of primary prevention for some of the critical difficulties that youth face. Results indicated a connection between school music participation and increased levels of self-reported health behaviors for students at one school. Gender, length, and breadth of participation did not appear to explain significant levels of the variance in health behaviors. Findings related to all other constructs were not significant.

Discussion of Findings

Music Education and Health-enhancing Behaviors

Significant differences in HEBI scores were found for music participants and non-participants from School B (p = .01). Further, the magnitude of this finding was large. While School A showed a similar trend, significant results were not found at an alpha level of .01 (p = .036). An examination of the factors that may have contributed to this variance yielded inconclusive results. Specifically, gender as well as length and breadth of music participation did not appear to play a significant role in the differences in HEBI scores for School B music and non-music participants.

Several authors have established a connection between involvement in pro-social activities and increased levels of health behaviors (Harrison & Narayan, 2003; Jessor et al., 1998a; Miller et al, 2008; Rainey, McKeown, Sargent, & Valois, 1998; Walsh, 1985). While many of these studies focused on sports and other after-school activities, the current research indicated that similar positive outcomes may be apparent for in-school band or choir. Unfortunately, results were only significant for one of the schools in this study (School B), tempering the generalizability and overall value of the finding.

While research has indicated that not only is it important to look at participation versus nonparticipation when evaluating positive outcomes for youth, but also duration, number of activities, and breadth of participation (Fredricks & Eccles, 2006; Gardner, Roth, & Brooks-Gunn, 2008; Peck, Roeser, Zarrett, & Eccles, 2008; Roeser & Peck, 2003), the current research failed to find such a connection. When looking at how long participants in the current study had participated in school band/choir and how many hours they generally spent per week on music activities, it became evident that

participation levels of the samples were low (1-3 years; 1-3 hours). Thus, while this study was high on the number of music students, they had not been participating for very long. This is not unexpected given the younger age of the sample.

One difference between this study and some of the previous ones (e.g., Fredricks & Eccles, 2006; Gardner, Roth, & Brooks-Gunn, 2008) that may account for this difference was how depth and breadth were operationally defined. This study grouped students in the following groups: no participation, 1-3 years/hours, 4-6 years/hours, 7+ years/hours of music participation. Other research followed adolescents across 3 years ("waves") and created the following groups: no participation in any school clubs or organizations at any wave, 1 year or involvement in 1 wave, 2 years or participation in 2 out of 3 waves, and involvement in any clubs/organizations all three waves. Thus, the categories in this study may have been too broad to reveal any differences, particularly since most students begin in-school band or choir in fourth or fifth grade and would not have had time to participate for much more than 3 years.

Music Education and Adaptive Behaviors

While there was some evidence of a link between music participation and health behaviors (at least for one of the schools), no such connection was found for adaptive behaviors. Specifically, students from both schools participating in band or choir received relatively similar mean scores on the *Personal Adjustment Composite* (PAC) of the *Behavior Assessment System for Children, Second Edition.* Further, both music and no music groups received mean scores in the "Average" range on the PAC, indicating typical levels of adaptive behaviors when compared to the standardization sample. These results were in contrast to previous authors' work finding positive associations between

extracurricular activities and decreases in maladaptive behaviors (conduct and emotional problems) and development of pro-social adaptive skills such as teamwork, trust, accountability, leadership, and character and building peer and family relationships for adolescents (Clawson & Coolbaugh, 2001; Harrison & Narayan, 2003; Office of Juvenile Justice and Delinquency Prevention, 1999; Wright et al., 2006).

It was also inconsistent with research indicating a positive relationship between engagement in structured extracurricular activities and higher levels of self-esteem (Eccles & Barber, 1999), internal locus of control (Gilman, 2001), and pro-social behaviors such as attending college, voting, and volunteering (Zaff et al., 2003).

One theory to explain the discordant findings between this study and previous research relates to the instrumentation used. For example, many of the prior studies looked at specific adaptive and maladaptive behaviors (e.g., school attendance, drug use, voting, volunteering), whereas the PAC is a more global scale of adaptive behaviors. It is possible that the students involved in the current study may have been weaker or stronger in one area, but their overall adaptive behavior and subsequent score was balanced out with functioning in the other areas. In other words, the PAC may not have been sensitive enough to produce significant results. Further, students in this study tended to be younger (early adolescents) as opposed to the older adolescents and college students in the previous studies. Perhaps these adaptive skills among younger music program participants are not as pronounced when compared to their peers who are not involved in music programs. However, as youth stay in music longer (whether it is something about the child or the music program), they may begin to evidence differences in behavior as compared to their peers.

Music Education and Self-efficacy

Previous researchers have reported that those with high levels of self-efficacy are more likely to engage in preventive behaviors, exercise, quit smoking, and have better overall health than those with lower levels of self-efficacy (Bandura, 1986; Gecas, 1989). Self-efficacy has also been linked to the development of positive dental and dietary health behaviors. For example, those with higher levels of self-efficacy have been found to have better dental health behaviors (brushing and flossing; Stewart et al., 1999). Further, self-efficacy was found to significantly increase the reliability of the prediction outcomes concerning oral health behaviors (Tedesco et al., 1993). Brug, Lechner, and DeVries (1995) also found a correlation between self-efficacy and the consumption of fruits, vegetables, and salads.

The possible connection between music participation and levels of self-efficacy has not been previously examined. Nevertheless, due to the aforementioned correlation between self-efficacy and the other constructs of this study (health behaviors and adaptive behaviors), it was felt that a similar association would be found in terms of music education. In fact, similar positive correlations were also found for this sample among all constructs measured. Nevertheless, this study failed to produce significant findings in regards to an association between music education and self-efficacy. Specifically, results revealed that the music group and the no music group from both schools evidenced similar levels of self-efficacy.

This finding was both surprising and disappointing. It is possible that low sample size and statistical power resulting from having to analyze each school individually reduced the chance of significant findings in this area. This was magnified by the need to

use a more conservative alpha level to reduce the risk of Type I error. In future research self-efficacy may still represent an important concept to explore.

Limitations

There are several noteworthy limitations to this study. First, once consent was obtained from parents, participation was strictly voluntary. This affected the extent to which results could be generalized, as levels of motivation and attitude toward testing may differ between volunteers and those who choose not to participate. In addition, all data were collected using self-report measures. Reliability and validity of information relied on the truthfulness and accuracy of the respondents. Response bias may have resulted if participants responded in a way that they perceived to be desirable to the researcher, or in a manner similar to their peers.

It is also possible that early adolescents may lack the developmental maturity to rate and accurately track their own attitudes and behaviors. Ideally, these factors would also be rated by parents and teachers in an effort to obtain a consensus among responses. It would have also been ideal to vary the presentation of the instruments used to control for potential fatigue effects. As mentioned, some participants appeared to tire when completing the lengthy assessment. The longest instrument (the BASC-2) was also presented last. If students' were already tired, it is possible that they may not have completed the final instrument as accurately as possible. Varying the order of the instruments within the packets would have controlled for this potential confounding factor. Another option would have been to stream-line the assessment, only having students complete those parts of the assessment directly related to the research questions. For example, participants completed all of the BASC-2 (maladaptive and adaptive

behaviors) even though only adaptive skills were to be analyzed. Stream-lining this assessment would have cut down the amount of time necessary for data collection and possibly reduced fatigue.

Participation in non-music related extracurricular activities was not measured in the current study. This represented a limitation for two reasons. Students who did not participate in music could have been involved in other extracurricular activities (e.g., sports, theater, clubs), resulting in similar positive outcomes in their social emotional functioning as those involved in music programming. Additionally, those involved in music programs might have also participated in other extracurricular activities which could have had a confounding effect. Ideally, a question regarding any participation in extracurricular activities should have been asked in the demographic questionnaire and then controlled for during analyses.

As mentioned, due to the correlational nature of this study, it is impossible to attribute any significant increases in health behaviors to music education participation. It is possible that students may have entered those music programs because they had high levels of health behaviors in the first place. While this is a common limitation of research in this area, as typically youth self-select into music groups, it is important to be aware of this constraint.

Finally, some of the major limitations of this study were the difference between schools in terms of demographic characteristics (age, grade, gender, SES) as well as quality of music program. In addition, the lack of independent samples further convoluted the statistics and findings of the research. This study also included 30 fifth grade music participants from school A who were not represented in any other group (non-

participants). These were potential confounding variable as differences between groups could have been due to age and SES factors as opposed to music participation or non-participation. Just as these differences made comparisons between schools difficult, it also limited the generalizability of any findings beyond the scope of the specific schools participating in this study.

Recommendations for Future Research

There appears to be some evidence that in-school music education participation is related to increased health behaviors in adolescents, though this finding is tenuous since it was only found for one of the schools. Nevertheless, there are several areas where future research can build upon the findings of this study in examining the impact of music education on wellness in youth.

Ideally, it would have been preferable to match students based upon demographics. This approach would have necessitated a much more rigorous selection process to ensure that students from both schools were comparable. The involvement of more than two schools and a larger sample size would have further aided in this endeavor. A repeated measures or other longitudinal design would allow one to look at how students who are in music programs change over time. Through this methodology, not only would statistical power be increased, but it would also allow researchers to toward a causal model rather than a correlational one.

A larger sample size from a more diverse population with a repeated measure design would have also allowed this study to keep with the original research questions. Initially, this study aimed to compare music students, discontinuers and non-music students. Unfortunately, the number of discontinuers who volunteered to participate was

too low to yield any useful information and, thus, they were combined with non-participants. An investigation that follows students across time would provide information on the stability of positive outcomes.

An examination of the effects of music programming for different SES populations also appears to be warranted for future research. In the current study, significant or close to significant results were found for School B, which was a lower SES Title 1 school. It would be interesting to see if music programming produces more consistent benefit for students from lower SES backgrounds. Particularly, as these are the students who tend to have weaker music programs and less access to other activities and opportunities. Similarly, quality of music programming is a possible area of future research. Again, positive results were found for School B, which had the less established music program of the two schools. An examination of whether this holds true for other programs as well as potential reasons for its occurrence, and implications for practice all deserve further attention.

Much of the previous research has taken a somewhat narrow perspective by only examining the individual and his or her participation in music programming. However, with younger students, parents are much more involved in the educational decisions that are made and in facilitating participation in extracurricular activities (e.g., providing transportation, paying additional costs). For this reason, it is recommended that future research look at the role of parent involvement in students' music participation For example, future research could evaluate parent involvement in music and the possible role that involvement plays in a child's wellness. Research could also look at whether initial participation in music education is motivated by the parent, the child, or another

person (i.e., did the student join band at the urging of his mother or father or was it solely the child's idea). Because the participants in this study were younger than those in other previous research, it is quite possible that their decision to participate in music programming was in response to parental encouragement or pressure. As noted above, parent and teacher ratings of student health behaviors and wellness would be important to consider rather than relying on self-report alone.. While this study solely looked at adolescent perceptions, teacher and/or parent perceptions may provide a wealth of information to either further validate and/or build upon the student perceptions.

As mentioned, this study was correlational in nature. Thus, it cannot be said whether music education led to positive health behavior scores or whether students already high in health behaviors chose to enter music education. Future experimental and/or longitudinal research in the area of music education and positive youth outcomes may provide a clearer picture of the relationship found, as has been suggested by Fredricks and Eccles (2006). This approach would provide a way to look at students over time in relation to the participation in music education and changes in outcomes over time. A repeated measures design would also help to build statistical power over time even if sample size was low. Future research could employ a pre- and post- test method after a year of instruction. Research could also follow students into the high school or even post high school years. This type of longitudinal research would not only provide statistical power, it would be of clinical interest to see the effect music education may play over time on students' health behaviors and would aid educators in developing appropriate health and music curriculums across grade levels.

Finally, it was interesting to note that participation decreased as students got older. It may prove useful to examine if this is a trend among music programs. If it is a trend, research in the area of empirically-validated steps schools can take to keep students involved in music education may be warranted. Conversely, this may have simply been an artifact of the sample in this study. For instance, older students may be less likely to agree to volunteer to participate in a study. A cursory look at the overall enrollment rates of students in the music programs involved in the current study indicated that participation did decrease as youth got older.

Perhaps, at younger ages students are more likely to be involved in a variety of activities in an effort to figure out what they enjoy and are competent at. As they get older, they begin to refine their interests and gravitate toward other activities. In fact, Boyle, DeCarbo, and Jordan (1995), in a survey of middle-school band directors, found that one of the most frequently cited reason for youth leaving band programs was loss of interest in band. Or, maybe as the academic expectations increase as youth get older, they have less time and energy to devote to music. It may also be an artifact of scheduling and and course conflicts. For example, a student may want to enroll in a limited offering course (e.g., advanced placement, language), but is not able to do so because of participation in band or choir. Students may be less likely to make that sacrifice in later years. The role of scheduling in lack of retention has also been documented in the research (Boyle et al.; Holz, 2001; Sandene, 1994).

Conclusion

There does appear to be some connection between music participation and health behaviors. The consistent use of health-enhancing behaviors is important as these

behaviors are correlated with a number of positive outcomes as well as the reduction of more detrimental outcomes for youth. While it is not clear whether music education produces these results or that self-selection plays a role, there does appear to be a connection.

The realization that school psychologists can play an important role in preventing mental health concerns and in promoting wellness in children has become increasingly prevalent in the literature (Suldo, 2009). Extracurricular activities may be one way of creating positive avenues for youth involvement. Youth have a multitude of differing wants, interests, and needs. Thus, having a variety of opportunities for them to be involved is likely to contribute toward positive outcomes. Music education is potentially one of these avenues. Nevertheless, in a time of budget cuts and focus on test scores, this type of programming is often first to be cut, thereby eliminating a potential resource for educators and youth.

While school psychologists are not necessarily involved in the music programming in schools, they are in a role that lends itself to consultation on health related concepts and the role music education may play in health behaviors. As such, school psychologists can aid music educators in promoting the importance and need for music education within the schools to administration, parents, and the community as a whole. Similarly, primary prevention is a school-wide initiative that involves all school staff including school psychologists and music instructors. By working together within each professional's area of expertise, educators can find ways to integrate programming more fully throughout a child's educational experience.

The current study attempted to find a connection between music education and several areas of wellness in youth with the aim of establishing music education as a valuable primary prevention strategy. While the majority of the outcomes of this study were not significant, research in this area appeared worthwhile as numerous areas of future research that improve and build upon the current methodology were brought to light.

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APPENDIX A

DEMOGRAPHIC QUESTIONNAIRE

Background Information

What grade are you in? _____

How old are you? _____

Are you male ____ or female ____ (check one)

Do you get free or reduced price lunch at school? Yes____ No____

Questions 1-3 ask about your current music participation.

1. Do you participate in school music groups (orchestra, band, choir)? Yes____ No____

If you answered "yes" to #1

What group(s) do you participate in (orchestra, band, choir)? _____

How long have you participated? _____

How many hours do you participate per week (group time)? _____

2. Do you participate in music groups within your community or state?Yes ____ No____

If you answered "yes" to #2

What group(s) do you participate in? _____

How long have you participated? _____

How many hours do you participate per week? _____

3. Do you take private musical instrument lessons (lessons ***not*** at school)?Yes ___ No___

If you answered "yes" to #3

What instrument(s) do you take lessons for? _____

How long have you taken lessons? _____

How many hours do you take lessons per week? _____

How many hours do you practice music per week? _____

Please turn over the page and complete the back!

Questions 4-6 ask about your music participation in the past:

4. Have you ever participated in school music groups (orchestra, band, choir) **but don't anymore**? Yes ____ No____

If you answered "yes" to #4

What group did you participate in? _____

How long did you participate? _____

How long ago did you stop? _____

How many hours did you participate per week (group time)? _____

5. Have you ever participated in music groups within your community or state **but don't anymore?** Yes ____ No____

If you answered "yes" to #5

What group did you participate in? _____

How long did you participate? _____

How long ago did you stop? _____

How many hours did you participate per week? _____

6. Have you ever participated in private music lessons (lessons ***not*** at school) **but don't anymore**? Yes ____ No ____

If you answered "yes" to #6

How long did you participate? _____

How long ago did you stop? _____

How many hours did you participate per week? _____

How many hours did you practice music per week? _____

APPENDIX B

SELF-EFFICACY SCALE

SELF-EFFICACY SCALE

Instructions: This questionnaire is a series of statements about your personal attitudes and traits. Each statement represents a commonly held belief. Read each statement and decide to what extent it describes you. There are no right or wrong answers. You will probably agree with some of the statements and disagree with others. Please indicate your own personal feelings about each statement below by marking the letter that best describes your attitude or feeling. Please be very truthful and describe yourself as you really are, not as you would like to be.

1. I like to grow house plants.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
2. When I make plans, I am certain I can make them work.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
3. One of my problems is that I cannot get down to work when I should.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
4. If I can't do a job the first time, I keep trying until I can.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
5. Heredity plays the major role in determining one's personality.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E

6. It is difficult for me to make new friends.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
7. When I set important goals for myself, I rarely achieve them.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
8. I give up on things before completing them.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
9. I like to cook.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
10. If I see someone I would like to meet, I go to that person instead of waiting for him or her to come to me.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
11. I avoid facing difficulties.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E

12. If something looks too complicated, I will not even bother to try it.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
13. There is some good in everybody.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
14. If I meet someone interesting who is hard to make friends with, I'll soon stop trying to makes friends with that person.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
15. When I have something unpleasant to do, I stick with it until I finish it.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
16. When I decide to do something, I go right to work on it.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
17. I like science.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E

18. When trying to learn something new, I soon give up if I am not initially successful.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
19. When I'm trying to become friends with someone who seems uninterested at first, I don't give up easily.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
20. When unexpected problems occur, I don't handle them well.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
21. If I were an artist, I would like to draw children.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
22. I avoid trying to learn new things when they look too difficult to me.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
23. Failure just makes me try harder.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E

24. I do not handle myself well in social gatherings.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
25. I very much like to ride horses.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
26. I feel insecure about my ability to do things.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
27. I am a self-reliant person.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
28. I have acquired my friends through my personal abilities at making friends.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E
29. I give up easily.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E

30. I do not seem capable of dealing with most problems that come up in my life.	Disagree Strongly A	Disagree Moderately B	Neither Agree Nor Disagree C	Agree Moderately D	Agree Strongly E

APPENDIX C

HEALTH-ENHANCING BEHAVIOR INDEX

Health-Enhancing Behavior Index

Instructions: Please complete all questions by marking your answer with an 'X'.

I. Think about your usual eating habits.

DO YOU PAY ATTENTION TO:	None	Some	A Lot
a. Seeing that you eat a healthy diet?	____	____	____
b. Keeping down the amount of salt you eat?	____	____	____
c. Eating only as much as your body really needs?	____	____	____
d. Keeping down the amount of fat you eat?	____	____	____
e. Drinking enough milk every day?	____	____	____
f. Eating some fresh vegetables every day?	____	____	____
g. Eating in a healthy way even when you're with friends?	____	____	____
h. Eating healthy snacks like fruit instead of candy?	____	____	____
i. Eating foods that are baked or broiled rather than fried?	____	____	____

II. Think about the kinds of things you usually do <u>after school and on weekends.</u>

About how many hours do you usually spend each week:

	None	1 Hour a Week	2-3 Hours a Week	4-5 Hours a Week	6-7 Hours a Week	8 or More Hours a Week
a. Taking part in an organized sport or recreation program	____	____	____	____	____	____
b. Working out as part of a personal exercise program (like biking or running)	____	____	____	____	____	____
c. Joining in school yard and neighborhood games like basketball, soccer, touch football, or volleyball?	____	____	____	____	____	____
d. Practicing different physical activities like shooting baskets, working on dance or cheerleading routines?	____	____	____	____	____	____

III. SLEEP HABITS

a. What time do you usually get to sleep at night during the school week?

___ 7:30 pm or Earlier ___ 8:00 pm ___ 8:30 pm

___ 9:00 pm ___ 9:30 pm ___ 10:00 pm

___ 10:30 pm ___ 11:00 pm ___ 11:30 pm

___ Midnight or Later

b. What time do you usually get up in the morning on school days?

___ 5:00 am or Earlier ___ 5:30 am ___ 6:00 am

___ 6:30 am ___ 7:00 am ___ 7:30 am

___ 8:00 am or Later

IV. SAFETY BEHAVIORS

a. When you're riding in a car that an older adolescent is driving, do you use your seatbelt?

___ Hardly Ever ___Some of the Time ___Most of the Time ___Almost Always

b. When you're riding in a car that your mother or father is driving, do you use your seatbelt?

___ Hardly Ever ___Some of the Time ___Most of the Time ___Almost Always

c. When you're riding your bicycle, do you wear a bicycle helmet?

___ Hardly Ever ___Some of the Time ___Most of the Time ___Almost Always ___ Don't Ride a Bike

d. When you're roller-skating, rollerblading, or inline skating, do you wear any safety gear like a helmet, knee pads, elbow pads, or gloves?

___ Hardly Ever ___Some of the Time ___Most of the Time ___Almost Always ___ Don't do these Sports

APPENDIX D

UNIVERSITY OF NORTHERN COLORADO INSTITUTIONAL REVIEW BOARD APPROVAL

IRB CONTINUATION REVIEW

Project Title: *The Effect of Music Education on Early Adolescents' Adaptive Behaviors, Health Enhancing Behaviors, and Self-Efficacy*

Name of Researcher: Kimberly Root (Research Advisor: Rik Carl D'Amato)

1. Check one: Changed to Robyn Hess

___ The stages of this research involving data gathering from, or other contact with, human subjects are complete (or will be completed by the first of next month).

___ The stages of this research involving data gathering from, or other contact with, human subjects were not completed and will not be continued.

✓ I request an additional one year approval period for the data-collection phase of the project.

2. How many subjects participated (or have participated to this point)?
154

3. How many subjects, after providing consent, chose not to participate or dropped out during their participation? 0

4. Describe any adverse events or unanticipated problems involving risks to subjects or others.
None

5. Describe any complaints you may have received, or concerns that were expressed, about the research.

None

6. Please summarize any recent information that has come to your attention regarding risks associated with the type of research you are conducting.

None

7. Signed informed consent forms must be retained on campus for three years and must be available for IRB review. Where on campus are the informed consent forms for this study being stored?
Currently, I have them locked up at my home. I will mail them to my current research advisor, Dr. Robyn Hess, for her to store on campus.

8. Please submit with this continuation review a copy of the informed consent form used in this research. (If you must duplicate an actual form signed by a subject, please block out that subject's name.) Did the form you used deviate from that which you submitted as part of your original IRB proposal? If so, how?

Form attached.
There were No deviations. Upon continuation, the form will be ammended to reflect the change in my research Advisor. (Dr. D'Amat name will be replaced with Dr. Hs name/numb

9. If your original proposal called for debriefing of subjects, was (is) such debriefing completed for all subjects? If not, please explain why.

original proposal did not require debriefing. Participants were thanked and asked if they had questions or concerns. None did.

10. If your subjects were (are) from 12 to 18 years old, was (is) informed consent obtained from parents/guardians as well as from the participants? If no, please explain why.

Yes.

11. If your subjects were (are) from 7 to 11 years old, was (is) assent obtained from the subjects in addition to informed consent from parents/guardians? If no, please explain why.

yes.

12. To request an additional one year approval, submit to Sherry May in the Sponsored Programs and Academic Research Center (SPARC):

* A new IRB proposal if there are substantial changes from the original, e.g., additional variables are to be assessed, there is a large increase in the subjects' participation time, another measurement is being added or there is some other significant change in methodology.

* Only an addendum to the original proposal if there are to be only minor changes, e.g., a few more subjects than anticipated, additional researchers will have access to the data etc.

* If you wish an additional one year approval and there are no changes in your proposal, return only this form.

Robyn Hess — Researcher's or Research Advisor's signature — Date 7/25/08

Email address: robyn.hess@unco.edu

Approved for 1 year — IRB Co-Chair's Signature — Date 18 Aug 08

APPENDIX E

AUTHOR PERMISSION TO USE SELF-EFFICACY SCALE AND HEALTH-ENHANCING BEHAVIOR INDEX IN RESEARCH

Kimberly A. Root Wilson
6 Matthew Drive
Easthampton, MA 01027
(413)527-5218
rootk91107@aol.com

April 17, 2006

Dr. Mark Sherer, Ph.D.
Director of Neuropsychology
Methodist Rehabilitation Department
1350 East Woodrow Wilson
Jackson, MS 39216

Dear Dr. Sherer,

I am a doctoral student working with Dr. Franci Crepeau-Hobson at the University of Northern Colorado. Currently it is my hope to use the Self-Efficacy Scale as part of my doctoral dissertation. I am planning to investigate the effects of participation in music education on the adaptive behaviors, health-enhancing behaviors and self efficacy of early adolescents. The Self Efficacy Scale is, of course, a logical measure to use in determining general Self-Efficacy of early adolescents.

Please grant me permission to use the Self Efficacy Scale in my dissertation by signing the line below. Your help in this matter would be greatly appreciated. I have enclosed a self-addressed, stamped envelope for your convenience.

Thank you very much for your assistance.

Sincerely,

Kimberly Root Wilson

Kimberly A. Root Wilson

M. Sherer, Ph.D.
Permission Granted for Kimberly Root Wilson
to use the Self Efficacy Scale in her dissertation

Kimberly A. Root Wilson
6 Matthew Drive
Easthampton, MA 01027
(413)527-5218
rootk91107@aol.com

April 17, 2006

Richard Jessor, Ph.D.
Institute of Behavioral Science
University of Colorado at Boulder
483 UCB
Boulder CO 80309

Dear Dr. Jessor,

I am a doctoral student working with Dr. Franci Crepeau-Hobson at the University of Northern Colorado. Currently it is my hope to use the Health Enhancing Behavior Index as part of my doctoral dissertation. I am planning to investigate the effects of participation in music education on the adaptive behaviors, health-enhancing behaviors and self efficacy of early adolescents. The Health Enhancing Behavior Index is, of course, a logical measure to use in determining Health Enhancing Behaviors of early adolescents.

Please grant me permission to use the HEBI in my dissertation by signing the line below. Your help in this matter would be greatly appreciated. I have enclosed a self-addressed, stamped envelope for your convenience.

Thank you very much for your assistance.

Sincerely,

Kimberly Root Wilson
Kimberly A. Root Wilson

Richard Jessor MT
R. Jessor, Ph.D.
Permission granted for Kimberly A. Root Wilson
to use the HEBI in her dissertation

email sent 5-5-06

APPENDIX F

SUPERINTENDENT AND PRINCIPAL PERMISSION TO CONDUCT RESEARCH

UNIVERSITY of NORTHERN COLORADO

Informed Consent for Participation in Research
University of Northern Colorado
Project Title: The Effect of Music Education on Early Adolescents' Adaptive Behaviors, Health- Enhancing Behaviors, and Self-Efficacy

Researcher: Kimberly Root Wilson, School Psychology doctoral student
Phone Number:

Research Advisor: Dr. Robyn S. Hess
Phone Number:

Hello. I am conducting a study to examine the effect participation in music education has on early adolescents' engagement in adaptive behaviors, their practice of healthy behaviors, and how they feel about themselves. The practice of healthy behaviors and self-efficacy appear to contribute to the prevention of high-risk behaviors (drug use, smoking, etc.)

I would like to have students from your school participate in answering 3 questionnaires that assess the practice of certain healthy behaviors and adaptive behaviors, and levels of self-efficacy. In addition, I would like the students to complete a short survey regarding his or her participation (or non participation) in music groups or lessons. It will take your child approximately one hour to fill out the questionnaires. Students do not have to participate in music groups to complete my questionnaires. In fact, I need surveys completed by students who DO NOT participate in music groups *as well* as those who do.

The administration of the questionnaires and the data collection procedures are unobtrusive and offer no more risk than what your child would encounter during a typical classroom activity. Students receiving permission to participate from their parents and agreeing themselves to participate will be asked to complete the questionnaires anonymously. Further, they will be allowed to withdraw from participation at any point, if they so wish.

Please feel free to phone me if you have any questions or concerns about this research. If you give permission for me to conduct my research within your school, please sign this form.

Thank you for assisting me with my research. I truly appreciate it!

Sincerely,

Kimberly Root Wilson

By signing, I grant permission for Kimberly Root Wilson to conduct her research at Middle School.

_____

Authorized Signature / Title

APPENDIX G

PARENT CONSENT FOR CHILD TO PARTICIPATE IN RESEARCH

UNIVERSITY of NORTHERN COLORADO

Informed Consent for Participation in Research
University of Northern Colorado
Project Title: The Effect of Music Education on Early Adolescents' Adaptive Behaviors, Health Enhancing Behaviors, and Self-Efficacy

Researcher: Kimberly Root Wilson, School Psychology doctoral student
Phone Number:

Research Advisor: Dr. Robyn S. Hess
Phone Number:

Hello. I am conducting a study to examine the effect participation in music education has on early adolescents' engagement in adaptive behaviors, their practice of healthy behaviors, and how they feel about themselves.

I would like to have your child participate in answering 3 questionnaires that assess the practice of certain healthy behaviors and adaptive behaviors, and levels of self-efficacy. In addition, I would like your child to complete a short survey regarding his or her participation (or non participation) in music groups or lessons. It will take your child approximately one hour to fill out the questionnaires. Your child does not have to participate in music groups to complete my questionnaires.

The administration of the questionnaires and the data collection procedures are unobtrusive and offer no more risk than what your child would encounter during a typical classroom activity. Furthermore, the benefits of this study include a better understanding of the effects of music education programs on an early adolescent's behaviors and how they feel about themselves. This is important as the practice of healthy behaviors and self-efficacy appear to contribute to the prevention of high-risk behaviors (drug use, smoking, etc.).

Students receiving permission to participate from their parents and agreeing themselves to participate will be asked to complete the questionnaires anonymously. Further, they will be allowed to withdraw from participation at any point, if they so wish. Students participating will receive a small thank you gift for their participation.

Please feel free to phone me if you have any questions or concerns about this research. If you give permission for your child to participate in my research, please sign the back of this form.

Thank you for assisting me with my research. I truly appreciate it!

Sincerely,

Participation is voluntary. You may decide not to allow your child to participate in this study and if (s)he begins participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact the Sponsored Programs and Academic Research Center, Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-1907

_____ _____

Child's Full Name (please print) Child's Birth Date (month/day/year)

_____ _____

Parent/Guardian's Signature Date

APPENDIX H

STUDENT ASSENT TO PARTICIPATE IN RESEARCH

UNIVERSITY of NORTHERN COLORADO

Assent to Participate in Research
University of Northern Colorado

Hi!

My name is Kimberly Root and I'm a student at the University of Northern Colorado working on a graduate degree. I do research on music and health behaviors. That means I study whether participation in musical activities affects certain healthy adolescent behaviors. I would like to ask a lot of sixth- and seventh-graders about their musical participation and certain behaviors they engage in. If you want, you can be one of the students that help me with my research.

If you want to help, I'll ask you to complete a few questionnaires. The questionnaires will ask you about your participation in music groups, your practice of certain behaviors, and your belief in your ability to control your decisions. This isn't a test or anything like that. There is no right or wrong answers, and there won't be any score or grade for your answers. You will not even be asked to write down your name. It will take about one hour for you to answer my questions. I'll ask your teacher for the best time for you to fill out my questionnaires so that you don't miss anything important.

Answering my questionnaires probably won't help you or hurt you. Your parents have said it's okay for you to complete my questionnaires, but you don't have to. It's up to you. Also, if you say "yes" but then change your mind, you can stop any time you want. Do you have any questions about my research? Please let me know, and I will try to answer your questions.

If you want to be in my research, sign your name below and write today's date and how old you are next to it.

Thanks!

Student	Age	Date

Researcher	Date