Music Teachers’ Perspectives on Music Instruction as Intervention for Students with ADHD

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A research paper submitted in conformity with the requirements
For the degree of Master of Teaching
Department of Curriculum, Teaching and Learning
Ontario Institute for Studies in Education of the University of Toronto

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Abstract

Music is a concept that is associated with healthy social development. Additionally, musical training has been shown to correspond with increased IQ among young children and music therapy has shown to decrease the undesirable behaviours associated with attention deficit hyperactivity disorder (ADHD). The current study investigated two music teachers’ attitudes towards music instruction as responsive pedagogy for students with ADHD using a semi-structured interview design. The results demonstrate that teachers believe that music-making activities are effective in developing greater self-esteem and confidence in students with ADHD, due to their ability to achieve success in the musical domain. Furthermore, student choice of instrument is seen as essential for fostering engagement and success with music education. The findings also suggest that passive music engagement, such as background music, can be effective at helping students maintain focus and on task behaviour in other academic classes. Finally, the findings raise a question about the effectiveness of inclusivity, both in the music and the general education classroom, with teachers believing that there are both positive and negative effects from including students with ADHD in mainstream classrooms.

Key Words: Attention Deficit Hyperactivity Disorder, ADHD, ADHD Intervention, Music Instruction, Music Education
Acknowledgments

I wish to acknowledge and thank Dr. Angela MacDonald, my MTRP supervisor, and Sarah Cashmore, our teaching assistant (TA), for all of their support and guidance throughout the process of completing this research project. Their feedback and comments have been invaluable in helping me develop and complete a robust research paper.

I would also like to extend my gratitude to the participants in my study. Without their willingness to share their beliefs and experiences I would not have been able to develop a comprehensive understanding of my research topic. Their input and responses have helped me to further my own understanding of education and will be invaluable to me as I continue my journey to become the best teacher that I can be.

Thank you to my parents and my sister for all of their help and suggestions during the intensive process of writing and editing my paper. I would also like to thank Leah for being my rock over the last 2 years. Her support is the primary reason that I have made it this far and, without her encouragement, this project and my Masters degree may never have been fully realized.
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Chapter 1: Introduction

1.0 Research Context and Problem

_If a man does not keep pace with his companions, perhaps it is because he hears a different drummer. Let him step to the music which he hears, however measured or far away._ - Thoreau, 1854

This inspirational quote is relevant to many students in today’s educational system. In the current school environment, there is a new and developing understanding of the uniqueness of every student. All students, including those who are typically developing and those with disabilities, exhibit a range of strengths and weaknesses across the various curricula based on their unique abilities and learning styles.

An area of high interest in the field of education today is how to integrate, with successful outcomes, children who are identified as having special needs. There are a large number of disorders for which children require a certain level of accommodation or modification to their school environment and curriculum to enable them to develop and progress as much as possible. Some of the most commonly diagnosed disorders among school-age children are anxiety disorders, autism spectrum disorders (ASD), and attention deficit hyperactivity disorder (ADHD), which is the primary focus of the current study (Children’s Mental Health Ontario, 2015). ADHD is a disorder that is characterized by frequent inability to maintain attention, high distractibility, disorganization, restlessness, and impulsivity. There are two main types of ADHD: the inattentive types; in which diagnosed individuals have difficulty maintaining focus, staying on task, and exhibiting high levels of distractibility; and the hyperactive type, in which individuals exhibit the difficulties of the inattentive type coupled with restlessness and impulsivity (Policy Development Directorate, 2007). Recent estimates suggest that between 5% and
8% of the population are affected (Graham, Seth, & Coghill, 2007; Polanczyk, Silva de Lima, Horta, Biederman, & Rohde, 2007). Furthermore, research has provided evidence that the diagnosis of ADHD among Canadian school-age children has been steadily increasing since the mid-nineties (Brault & Lacourse, 2012). Because of the relatively high rates of ADHD in elementary classrooms, it is important to identify effective methods of intervention and treatment to provide these students with the best possible chance at academic, social, and life success.

The most commonly used interventions for the management of ADHD in children has traditionally been the prescription of pharmacological drugs, such as methylphenidate (commonly known as Ritalin). As of 2007, the rate of pharmacological prescription for children with ADHD was 59%. However, despite the high rate of pharmacological prescriptions, research suggests that this method alone may not be the most effective way to treat children with ADHD in a way that produces sustainable and effective outcomes in the classroom (Evans, 2007). Rather, behavioural therapies (Evans, 2007) or a combination of pharmacological and behavioural therapies (Baren, 1995; Pelham et al., 2005) tend to result in more positive and resilient outcomes than pharmacological treatments alone. Evans (2007) describes two types of behavioural therapies that are in use for children with ADHD: token reinforcement and contingency contracting strategies. Both of these strategies rely on the use of a positive reinforcer (a reward) that a child can earn by engaging or in appropriate behaviour or forfeit by engaging in inappropriate behaviour or failing to engage in the desired behaviour. Baren (1995) also describes cognitive behavioural therapies (CBT) in which the child is trained to alter their behaviour to reduce undesirable behaviour and increase desirable behaviour by changing
the way that the child thinks about their own behaviour. These findings seem to suggest that having behavioural interventions in place within the school system can provide extra opportunity for students diagnosed with ADHD to manage and control the disorder and exhibit greater academic achievement.

An intervention that is seeing more use lately, with associated positive outcomes, is the use of music therapy for children with ADHD (De Mers, Tincani, Van Norman, & Higgins, 2009; Dunbar, 2014; Gooding, 2011; Sadiq, 2007). There are two types of music therapy that are in use today, passive and active. In active music therapy participants are involved with music by playing instruments, improvisation, receptive listening, writing lyrics and use of imagery. Essentially, active music therapy involves communicating through music. Conversely, passive music therapy involves activities such as clapping, tapping the feet or nodding along with music, but without direct participation in the music (Rayamajhi, 2013). Case studies have shown that music therapy can increase desirable behaviours (Dunbar, 2014; Gooding, 2011) while simultaneously reducing unwanted behaviours in children with special needs (De Mers et al., 2009). Furthermore the gains found from the implementation of music therapy, specifically a decrease in the incidence of hitting and screaming behaviours and an increase in appropriate communicative behaviours, have been shown to be relatively stable, lasting about 3 weeks after the time of intervention (De Mers et al., 2009).

The De Mers et al. study (2009), which was performed in a regular school classroom, suggests that musical interventions are applicable in schools with positive outcomes; however, because the interventions were administered by the researchers it does not provide the kind of data that this study seeks to identify; namely, music
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teachers’ application of music making activities in their own classrooms and their perception of how these activities impact the academic performance of students with ADHD.

1.1 Purpose of the Study

In view of this problem, the goal of my research is to understand how teachers and schools incorporate music instruction into the curriculum as a means of providing a creative and energetic outlet for students’ hyperactive behaviour, as well as a means of managing attention and focus on tasks and activities.

1.2 Research Questions

My research questions aimed to address how a sample of teachers implements music education as responsive pedagogy for students with ADHD. The primary research questions were: How are teachers implementing music instruction as responsive pedagogy for students with ADHD? From these teachers’ perspectives, what effects does music instruction have on the academic performance of students with ADHD?

Some other subsidiary questions that guided this study were: What are these teachers’ perspectives on the potential of music instruction as responsive pedagogy for students with ADHD in mainstream classroom settings? How are these teachers integrating music in a cross-curricular manner to facilitate academic achievement for students with ADHD? Through the teachers' responses to the developed interview questions I hoped to understand how music instruction can be an effective method for
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successfully integrating, accommodating and validating the school experience for students with ADHD.

In order to respond to the questions I have posed, I conducted a qualitative research study using purposeful sampling to interview two teachers about their instructional strategies for integrating music education as responsive pedagogy for students with ADHD in classroom settings.

1.3 Background of the Researcher

My personal experience with ADHD does not come from a diagnosis of my own, but from observations and experiences with peers and friends who have suffered from this disorder. I have seen firsthand, throughout my school career, how difficult it was for these students to maintain a desirable level of attention and focus in school and how little positive, helpful attention the teachers and faculty offered to them. More often than not, these students were reprimanded and punished for their behavioural outbursts rather than being given the understanding and assistance that they needed, a response that I became very familiar with in my childhood.

I am a musician and have been my whole life. Growing up, music was one of the only constant things in my life that I could always count on to get me through difficult times. With many issues arising in my social and family life, I would often turn to music as a means of escape. I began to develop myself as a singer and songwriter from a very early age and found solace in the fact that I could do something productive that allowed me to express myself and the difficulties I was going through. In my personal experience, it was the act of creating music that provided me with the catharsis that I needed to
handle my daily stressors. As a result, I have developed a keen interest in the myriad ways that music can be beneficial to everybody in all aspects of life. As a teacher candidate, I have now applied that interest to ways that music can be applied to assist students achieve academic success.

Furthermore, outside of the school environment, I have seen how activities such as learning and playing and instrument, singing, or dancing has provided people with ADHD an active point of focus and attention, through which they can achieve great things. I know a drummer who cannot sit still for any length of time, but when he is at his drum kit he will sit and play along for hours on end. Contrary to what many believe about a child’s ability to focus with ADHD, this ability to hyperfocus on a task is often seen in children with ADHD. Children with ADHD have a tendency to focus all of their attention on a single task that interests them, and be completely oblivious to anything going on around them, until they are satisfied that they have mastered it and can improve no more (SCIPS, 2007). In the case of my drummer friend, he becomes completely invested in mastering the increasingly difficult songs that he tackles on the drums and invests all of his energy and focus on that singular task, whereas in other types of tasks and activities, he finds it difficult to maintain the same level of focus. When I attempt to rationalize why this is so, I believe that it is the regularity of the music and the concrete rules and structure that it is based on that allows him to find a measure of mastery in the task. It is this kind of focus and attention to detail that I believe needs to be nurtured in students who suffer from ADHD. I believe that it can give them an outlet to show the world and their teachers that there is potential within them, despite the difficulties they have with the standard curriculum.
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From a different perspective, I believe that the regularity of music (e.g. the rhythm, timing, repetitiveness) can also act as a measure for the students against which they can perform their academic tasks. For example, mathematics and music are innately interconnected. The structure of music is built around specific ratios that inform the rhythm and metre of a song and particular frequency ratios create consonant and dissonant harmonies that influence the mood of a song. As such, I feel that by offering music to students with ADHD, they can use it to foster growth and strength in the area of mathematics. Additionally, sheet music and the ability to read it is a form of media literacy that can be incorporated into the classroom to provide an interesting way for students to engage in reading and literacy. These connections can be implemented through multiple curricula to help develop students’ strengths in multiple areas of intelligence. Another potential use would be to use music as a means of creating timeframes in the classroom. For example, a student with ADHD may be better able to focus on a task, given a song as a time limit rather than a strict length of time (e.g. 10 minutes for a worksheet). These ideas revolve around the use of music as an instructional topic and an instructional tool to be used in the classroom.

I am very interested in music as a therapeutic tool, and through my own personal experiences as well as discussions among peers, I have found that many people make use of music as a therapeutic tool instinctively. Some people simply listen to music to help regulate their emotions during difficult times. Some people like to actively create improvisational music as a means of directing extraneous energy. Some people like to play classical music as a means of relaxation. Personally, I like to improvise and play expressive music when I become emotional and upset. On one hand, the physical action
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of playing an instrument allows me to release pent up energy that develops when I find myself becoming emotionally upset. When I am in that tense state I am unable to think clearly and have a strong need to release physical energy. I am able to do so in a safe and controlled manner by directing the energy into my music. I also find that my thoughts become jumbled and erratic and through music I am able to calm and center myself to deal with the situation that has caused me to become upset. I find that the actions involved in making music, the kinds of sounds I can create allow me to find my bearings in my own psyche and refocus my thoughts and energies in a positive direction.

Whenever I am with a group of people, I like to look around and observe what others are doing. More often than not I see people playing with their hair, playing with pens, tapping or bouncing their feet or drumming on a table. I, myself, am a fidgety person and am always involved in some kind of activity that releases excess energy. How then can someone who has a clinical excess of energy be expected to unleash it in a healthy manner when it is bursting out of him or her? I have a strong belief that the physical actions involved in making music, whether it is with an instrument, ad hoc instruments (e.g. garbage pail and pens), vocally, or through dance or movement provides a healthy, creative and expressive outlet for this excessive energy. As a new teacher, I intend to provide my students with musical instruction and activities as a regular part of my classroom work. I do however, particularly hope that I can make use of it in ways to benefit students who have ADHD and can especially benefit from such an active release of creative energy. It is because of this interest that I am so interested in how other teachers apply musicality in their classrooms.
1.4 Overview

Chapter 1 includes the introduction and purpose of the study, the specific questions I aimed to address, as well as how I came to be involved in this topic and this study. In chapter 2 I conduct a literature review regarding the prevalence of ADHD in school-age children, symptomology and consequences in the classroom setting, the effects of ADHD on the academic performance of children, and the use and effectiveness of intervention methodologies. In chapter 3 I provide an elaborate description of the research design. I outline in detail the methodology and procedure used in this study, including information about the sample participants and data collection instruments. Chapter 4 identifies the key findings of my research and their significance to educational and academic domains. In chapter 5, I discuss the implications of my findings with regards to the educational community at large as well as the implications for my own practice as a beginning teacher and researcher. I also present recommendations for practice, areas for future research, and finally end with my concluding comments. References and a list of appendixes can be found at the end of the paper, following the conclusion.
Chapter 2: Literature Review

2.0 Introduction

Much of the available literature regarding the use of music as an intervention for students with Attention Deficit Hyperactivity Disorder (ADHD) has focused primarily on music therapy as it occurs outside of the classroom or school environment. However, there are numerous studies that have analyzed music’s efficacy as a tool for intervention for students with other types of disabilities. Furthermore, studies have been conducted that have assessed the use of music as a means to improve focus, both for students with and without developmental delays and behaviour disorders. In this chapter, I present a review of the current state of the literature regarding ADHD and its effects on students’ academic performance, traditional forms of intervention for children with ADHD, music therapy as a means of intervention and finally musical training as a means of intervention for students with behaviour disorders and developmental delays. In conclusion, I identify the gap in the existing literature that the current study aims to address.

2.1 ADHD and Its Characteristics

ADHD, also known as Hyperkinetic Disorder in the United Kingdom and Europe, (Graham, Seth, & Coghill, 2007; HKD; World Health Organization, 2010) is one of the most commonly diagnosed disorders among school age children (Brault & Lacourse, 2012). The main symptoms of ADHD are usually inattention, hyperactivity, and impulsivity, which are expressed in ways that are maladaptive and inconsistent with the diagnosed child’s developmental level. Furthermore, for a diagnosis of ADHD to be given, the symptoms must be pervasive in all environments, and persistent for at least 6
months. Furthermore, the impulsive-hyperactive behaviour or inattentiveness must be observed before age 12 according to the Diagnostic and Statistical Manual of Mental Disorders 5th edition (DSM-5; American Psychological Association [APA], 2013) and must present evidence of social, academic, or occupational functioning (APA, 2013; Steinau, 2013).

2.1.1 Prevalence and diagnosis of ADHD. Recent studies that assessed the number of diagnoses of ADHD in school age children have found that approximately five to eight percent of children worldwide suffer from ADHD (Brault & Lacourse, 2012; Graham et al., 2007; Polanczyk, de Lima, Horta, Biederman, & Rohde, 2007). Furthermore, it is estimated that due to variations in methodologies between studies (Polanczyk, de Lima, Horta, Biederman, & Rohde, 2007), ADHD is currently under-diagnosed in Europe and the United Kingdom (Graham et al., 2007), suggesting that the worldwide prevalence of ADHD is actually higher than what the literature currently states. This is of key importance because one of the necessary criteria for the diagnosis of ADHD according to the DSM-5 is the interference of the quality of social, school, or work functioning (APA, 2013).

2.1.2 ADHD and comorbid diagnoses. An interesting feature of ADHD that is important to recognize is that ADHD does not always occur in isolation. Many children who suffer from ADHD also have comorbid diagnoses, and the prevalence of these comorbidities have been estimated to be as high as 20% to 30% (Sherman & Tarnow, 2013; Shimabukuro et al., 1999) or even as high as 50% (Silver, 2006). Some of the most common disorders that are comorbid with ADHD include major depression, anxiety disorders, bipolar disorder, obsessive-compulsive disorder (OCD), and tic disorders (e.g.
Tourette’s syndrome) (Sherman & Tarnow, 2013; Silver, 2006). Some of these comorbid conditions, particularly major depression and anxiety disorders, are classified as secondary disorders that are brought on due to the difficulty and frustration of suffering from ADHD (Silver, 2006). Because of the high incidence of comorbidity with ADHD, it becomes even more important to address the best means of intervention in order to minimize the symptoms of ADHD and the resultant effects on academic performance, social development, and emotional development and stability or these outcomes can carry on into and through adulthood.

2.1.3 ADHD and adult outcomes. ADHD is not a disorder that ends with childhood, but rather can continue to affect individuals well into adulthood, if not managed and treated in childhood. Some of the outcomes that adult ADHD can have on an individual’s life include difficulties with finding and maintaining employment, managing successful relationships, an increased risk of automobile or machinery-related accidents, and an increased risk for drug and alcohol abuse (Biederman et al., 2006; Biederman et al., 2012; Graham et al., 2007; Sagall, 2014). Specifically, Sagall (2014) found that adults who suffer from ADHD are 2.4 times more at risk for impaired work performance and 3.3 times more at risk for financial stress. Furthermore, when considering their physical and mental health, they are 1.8 times more likely to have general health problems, 2.4 times more likely to develop mental health problems, and 3.3 times more at risk for developing antisocial personality disorder (Sagall, 2014). Based on the findings of these studies we can see why it is important to identify effective methods of intervention for children with ADHD as early as possible.
2.2 ADHD and Academic Performance

ADHD is associated with difficulties in the classroom resulting from the children’s inability to remain focused and on task. Difficulties have been found across all curriculum areas including deficits in mathematics and literacy skills (Sagall, 2013; Shimabukuro, Prater, Jenkins, & Edelin-Smith, 1999). Furthermore, studies have shown that children with ADHD who do not receive any kind of early intervention tend to exhibit greater deficits in academic performance (Sagall, 2013).

The reasons given as to why children with ADHD exhibit poor academic performance relate directly back to the symptoms of the disorder. Specifically, children with a high degree of inattentiveness have a hard time maintaining focus on lessons being taught, staying on task when doing individual work, and have thought patterns that tend to wander away from the subject at hand (Daley & Birchwood, 2009; Loe & Feldman, 2007). Additionally, children who exhibit high levels of hyperactivity due to ADHD have a hard time remaining still and seated when it is required for classroom activities and have difficulty managing their own behaviour, which can then lead to inappropriate outbursts of activity in the classroom (Daley & Birchwood, 2009; Loe & Feldman, 2007). Some of these deficits have been attributed to deficits in reward processing, working memory, and fine motor control (Graham et al., 2007). Miyapuram (2008) explains that reward processing is based on an individual’s ability to identify and predict the outcome of certain behaviours based on the potential for reward (which could be either external or internal). Strong reward processing enables students to identify the benefits of performing well in school and helps them to learn the appropriate behaviours necessary to do so. In
children with ADHD, however, this ability is weakened and as a result, these students have a more difficult time deriving the rewards from successful academic performance.

Unfortunately, children who suffer from ADHD tend to show increasing decline in academic performance over time, with girls exhibiting a greater degree of decline than boys (Sagall, 2013). This explains why early intervention an important step in developing these children’s potential.

2.3 Psychostimulant Treatment of ADHD

As with many illnesses the most common treatment that has traditionally been prescribed for the management of ADHD has been psychostimulant medication (Shimabukuro et al., 1999). A recent study has found that, as of 2007, 59.3% of children diagnosed with ADHD were prescribed medication as their primary mode of treatment, which represents a 1.6 fold increase since 1994 for children between the ages of three and nine years (Brault & Lacourse, 2012).

2.3.1 Effectiveness of pharmacological treatments. Pharmacological treatment with psychostimulants has been found to be effective for the management of the core symptoms of ADHD (inattention, hyperactivity and impulsivity) for approximately 70% to 80% of children who take them (Baren, 2005; Evans, 2007; Jitendra & DuPaul, 2007). Interestingly, despite the reduction in the core symptoms of ADHD, it has been found that treatment using psychostimulant medication does not produce a reliable increase in academic performance (Evans, 2007; Jitendra & DuPaul, 2007).

2.3.2 Concerns about pharmacological treatments. As with any medication that is given to children, there is concern about what kind of side effects or long-term effects
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the stimulant medication will have on the children’s physical and mental functioning (Sadiq, 2007). Additionally, there is growing concern over psychostimulant prescriptions for preschool age children. This is due to the fact that these medications have not been authorized for use by children under six years of age (Brault & Lacourse, 2012) and it has been shown that there is a less favourable risk benefit ratio for preschool age children than for school age children taking psychostimulant medication (Graham et al., 2007). Another concern is that psychostimulant medication has been shown to correlate with an increase in cardiac complication, with a reported 54 serious cases between 1999 and 2003 (Graham et al., 2007). Because of these concerns, parents and practitioners have looked for alternative modes of intervention that do not have the potential for negative health related side effects.

2.4 Psychosocial Therapy for ADHD.

A common alternative to pharmacological intervention for ADHD that has become popular is psychotherapy, the most common forms of which are behavioural therapy and cognitive behavioural therapy (CBT). These interventions involve addressing the behaviours that are performed by the child and modifying them to produce increased desirable behaviour and decreased undesirable behaviour (Shimabukuro et al., 1999). CBT takes this one step further and also addresses how the child thinks about themselves and their behaviour as a further means of modifying it (Baren, 1995; Knouse & Safren, 2010).

Research that has addressed the efficacy of behavioural therapy and CBT has found that it is an effective mode of intervention for the reduction of the unwanted
behaviour that is commonly associated with ADHD (Baren, 1995; Evans, 2007; Pelham et al., 2005). Furthermore, it has been shown that the positive effects of behaviour modification therapies tend to be longer lasting than the positive effects of traditional psychostimulant medication (Evans, 2007; Pelham et al., 2005). However, it is important to note, that newer types of delayed-release stimulant medications have been found to produce similar long-term results as behavioural therapies over periods as long as 36 months (Graham et al., 2007; Jitendra & DuPaul, 2007). It is important to recognize is that behavioural therapies are not as widely available as pharmacological treatment (Graham et al., 2007) thereby it may not be the best option available for all children with ADHD. Owing to the lack of availability of practitioners of behavioural therapy and the concerns over pharmacological treatment, another form of intervention that has shown promise for the treatment of children with disabilities is music therapy.

2.5 Music Therapy

Music therapy is a form of therapy in which an accredited music therapist makes skilful use of music and musical elements in order to promote, maintain and restore physical, mental, emotional, and spiritual health (Canadian Association for Music Therapy, 1999). The theory behind music therapy is based on the idea that music has nonverbal, creative, emotional, and structural qualities that relate to, and can facilitate interpersonal skills, self-awareness, learning, self-expression, communication, social play, and on task behaviour (Brown, 2012; Canadian Association for Music Therapy, 1999; De Mers, Tincani, Van Norman, & Higgins, 2009; Gooding, 2011).
2.5.1 Music therapy and the inhibition of undesirable behaviours. Studies have found that music therapy can inhibit the expression of negative behaviours, such as self-injury and aggression (De Mers et al., 2009), restlessness and impulsivity (Gooding, 2011). However, these results are not found to be universal. For example, Dunbar (2014) found that impulsivity was not significantly reduced among college age students with a history of ADHD. Furthermore, in a study of executive functioning among residents of a male correctional facility, music therapy was found to have positive results on executive functioning; however, these findings were not statistically significant compared to a control group (Ellis, 2014). The results of this study are intriguing because it is believed that some of the behavioural issues that manifest in children with ADHD are due to deficits in their executive functioning, which is involved in the regulatory control of thought and behaviour involving inhibitory responses (Barkley, 2011; Ellis, 2014). These results are intriguing; however, it is important to note that the participants in these studies were adults. It is not known whether the use of music therapy would have similar null results on impulsivity and executive functioning in school age children, whose brains and skills are still developing.

2.5.2 Music therapy’s effects on social skills. There are numerous studies that have addressed the use of music therapy as a tool for preschool and school age children. Specifically, researchers have found that among preschool children, music therapy increased the expression of communicative responses and acts in children with a diagnosed autism spectrum disorder as well as typically developing children (De Mers et al., 2009). Furthermore, the use of musical instruments was effective in gaining the attention of typically developing preschool children (Simpson, 2013). An interesting
finding that I came across while conducting this literature review was that music therapy was found to facilitate improved communication between typically developing children and children with developmental delays (De Mers et al., 2009).

There have been further studies that have addressed the effect that music therapy has on undesirable behaviours among school age children. In particular, it has been found that some students with ADHD, OCD and developmental delays exhibited a significant decrease in the incidence of behaviours such as hitting and screaming (De Mers et al., 2009), children with social skills deficits exhibited a reduction in restlessness and impulsivity (Gooding, 2011), and children who are overly excited can be induced to calm down and remain on task through the use of rhythmic clapping and chanting (Anonymous, 1999; Snow & D’Amica, 2010). Furthermore, among youth at risk for developing mental or social disorders (e.g. inner city youth) drum circle styled music therapy is effective at reducing anger and stress, lack of motivation and negative self-image (Snow & D’Amica, 2010).

With regards to the focus of the current study, there has not been an extensive amount of research conducted on the effectiveness of music therapy on the behaviour and social skills of children with ADHD. There are, however, some interesting findings worth noting. In one case study of a 14-year-old boy with ADHD, it was found that music therapy that employed the use of background music during study sessions increased his focus and increased his retention of the material he was studying (Dunbar, 2014). Furthermore, music therapy interventions involving movement and dance, performance, and improvisation were shown to improve attention, motivation, as well as sustained attention towards peers (Gooding, 2011). However, another finding that is worth noting is
that when either pharmacological or behavioural interventions were administered at a high dose or high intensity, respectively, there was no associated increase in desirable outcomes by adding the other intervention (Pelham et al., 2005). This is important to recognize because it suggests that a child that is already receiving a pharmacological treatment may not benefit from the addition of a behavioural therapy as well. This finding raises questions about potential interactions between music therapy and pharmacological therapies.

Unfortunately, much of the research on the use and effectiveness of music therapy for children with disabilities has focused primarily on children who suffer from autism spectrum disorders (Brown & Jellison, 2012). Furthermore, the majority of the research has addressed variables that relate specifically to social skills and competence with significantly less attention paid to academic variables (Brown & Jellison, 2012). This suggests that there is a dearth of research that addresses other types of disabilities that school age children face as well as the potential that music therapy has to improve academic performance on top of the social benefits it can provide. While the primary focus of my current study is on the potential benefits of music instruction on the academic performance of students with ADHD, I am including this research on music therapy because music therapy is founded on the basis that music, as a construct, has particular qualities that can facilitate the development of interpersonal skills, self-awareness, learning, self-expression, communication, social play, and on task behaviour (Brown, 2012; Canadian Association for Music Therapy, 1999; De Mers, Tincani, Van Norman, & Higgins, 2009; Gooding, 2011).
2.6 Musical Training and Effects on Academic Performance

Musical training has been shown to be associated with increases in children’s intellectual abilities (Schellenberg, 2011). Based on this understanding it is logical to presume that students who receive music instruction can exhibit greater academic achievement than those who do not. When we address this concept with regards to students with ADHD, there are factors that come into play that may affect how a student engages with their music instruction, which can affect how that instruction affects their intellectual and academic development. For example, research has shown that there is a gender difference in the type of instrument that children prefer, with boys exhibiting a leaning towards trumpet, low brass, and percussion instruments; whereas, girls tend to gravitate towards flute and clarinet as their instrument of choice (Harrison, 2007). For students with ADHD, who already exhibit difficulty in engaging with the education, it is important for teachers to recognize and incorporate children’s preferences in order to elicit their greatest academic performance (Temmerman, 2000).

Related to the concept of allowing students to utilize their innate preferences for musical tasks and instruments to foster increased engagement, Jones (2009) found that students, in general, become more engaged in their education when they are given the freedom to choose collaborative partners compared to their performance in groups assigned by their teacher. Considering the collaborative nature of music making, this finding is important to implement in classes in which there are students with ADHD.

2.6.1 Musical training and mathematical ability. Music as a construct shares many features with aspects of academia. For example, music is based around the use of particular ratios to produce certain types of consonant or dissonant harmonies or to
understand rhythmic patterns, and pattern recognition (Harris, 2008). These concepts are also an integral part of the mathematics curriculum. Because of the common concepts found between mathematics and music, I have speculated, for the purpose of this research, that an understanding of the structure of music as well as the ability to learn and play an instrument could have a positive effect on academic outcomes in mathematics. A functional magnetic resonance imaging study (fMRI) into this query has found that music can indeed have a positive effect on students’ mathematical abilities, with greater activation being evident in the left fusiform gyrus and the prefrontal cortex of participants who were musically trained, compared to those who were not, while performing mental addition and subtraction of fractions (Schmithorst & Holland, 2004). In particular, students who receive formal training in music show greater scores on mathematics achievement tests, learn the multiplication tables faster and with longer retention, and gain a better understanding of ratios and fractions (Harris, 2008; Hogenes, van Oers, & Diekstra, 2014).

2.6.2 Musical training and non-mathematical abilities. Research has shown that musical training can also have beneficial effects in academic areas other than mathematics. Students that receive formal music lessons have been shown to have improved reading skills in the primary grades, as well better performance in the arts curriculum (Hogenes et al., 2014; Lessard & Bolduc, 2011; Wilkinson, 2013). One interesting finding that was that, in third and fifth grade students, reading skills were negatively correlated with tempo matching skills (Lessard & Bolduc, 2011). This is interesting because it seems to suggest that students that have greater abilities to identify and match the tempo of a piece of music have a more difficult time on tasks involving
reading skills. However, it is important to note that many of these studies cannot claim causation due to the use of correlational or quasi-experimental research designs (Lessard & Bolduc, 2011).

**2.6.3 Musical training and cognitive abilities.** Musical training has also been studied with regards to its effects in areas other than academic subjects. Children’s cognitive functioning has been found to correlate positively with formal music training (Hogenes, et al., 2014; Wilkinson, 2013). Additionally, musical training also correlated positively with children’s academic self-concept, self-esteem, mood, concentration, and empathy (Čebulc, Končar, & Čuk, 2009; Degé, Wehrum, Stark, & Schwarzer, 2014; Wilkinson, 2013). These areas are important for a student’s success because they directly influence the academic abilities and performance of children in school (Čebulc et al., 2009; Degé et al., 2014; Hogenes et al., 2014; Wilkinson, 2013). Additionally, research has shown that teachers’ attitudes towards inclusivity in the classroom can affect students’ feelings of competence (Ballantyne & Mills, 2007). Since music instruction is an activity in which students with ADHD are often participating, Ballantyne and Mills’ finding is important for teachers to recognize.

One of the more surprising findings is that the positive effects of musical training on academic success remain constant even when IQ is controlled for (Degé et al., 2014). This suggests that musical training itself has a direct relation to academic performance and children’s cognitive functioning; however, because the study was correlational the authors were not able to claim that music lessons caused the improvements in cognition and academic performance. Despite the inability to state causation for music’s effects on cognition and academic performance, there is substantial evidence that suggests that
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children who are involved with music lessons will tend to exhibit a greater degree of success across multiple curricula in school as well as a more positive mood and self-image in the classroom.

2.7 Conclusion

ADHD is one of the most commonly diagnosed disorders among children, with associated negative effects on children’s academic performance, self-esteem, academic self-concept and many other areas of children’s functioning. In today’s integrative and inclusive classrooms, it is important to identify ways in which teachers can access and increase the skills and abilities of students who suffer from ADHD.

Research has found that music therapy can have many positive effects on the undesirable behaviours of ADHD, including impulsivity, on task behaviour, and communication and social skills, as well as reducing the negative effects of other comorbid diagnoses such as anxiety and depression. Furthermore, research has shown that formal musical training can have a beneficial effect on students’ academic self-concept, cognitive abilities, and academic performance across multiple curriculum areas. The findings and research that I have presented in this literature review provide a large body of evidence that suggest that the incorporation of music into the treatment regimen of children with ADHD have beneficial outcomes on both the desirable behaviours that we hope to increase as well as the undesirable behaviours that we hope to decrease. However, the research that has been conducted on musical training thus far, focuses on the implementation of musical training outside of the school environment and the benefits that transfer into the school environment. In a similar vein, the research on music therapy
also focuses on the implementation of the therapy program in an extra-curricular environment and the benefits that transfer into the school environment. Despite the fact that the majority of the research I investigated was conducted outside of the school environment, it is highly relevant to my current research topic as I investigated the application of music training within the school environment, and the findings from the literature suggest that incorporating a musical training program in schools for children with ADHD may serve to improve many aspects of the children’s academic life that are hindered by their disorder. By focusing my research on the application of these promising interventions within the school system, I hoped to provide further evidence of their applicability for use with students with ADHD. This research can expand on this existing body of research by suggesting ways that any teacher can incorporate these interventions into their classroom. The next chapter will describe in detail the methodology used to conduct the current study.
Chapter 3: Research Methodology

3.0 Introduction

In this chapter I describe the research methodology that I used in order to complete the research project. I outline the specific approach, procedures, and instruments that I used, including a semi-structured interview protocol, and I describe the participant criteria and recruitment procedures. Next, I provide detail concerning the data analysis process and the ethical considerations I accounted for in the research process. Finally, I review the methodological limitations and strengths of the research study.

3.1 Research Approach and Procedures

This investigation uses a qualitative approach that draws on characteristics of phenomenological research study to explore and analyze how teachers use music education with students with ADHD, and to hear their perspectives on the outcomes for students’ academic performance. The qualitative research design provides opportunities to investigate phenomena as they occur in real world situations, acknowledging the fact that there is diversity in milieus, cultures, subcultures, and lifestyles (Flick, 2009) and using this understanding to draw conclusions about our social world. As I addressed in my literature review, much of the current research in the field of musical training and ADHD is conducted outside of the school setting by researchers or professional music therapists. This research, while providing valid data on the effects of music and music training, does not provide insight into the applicability of music, or its effects, in real world settings. The qualitative nature of my current study aimed to enhance the existing body of knowledge with data of music teachers’ actual lived experience in teaching
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music to students with ADHD in the context of a mainstream classroom. This focus on lived experience in real world contexts, and the teachers’ perceptions of how music instructions can be used to address the difficulties of students with ADHD, is the key characteristic of phenomenological research that I drew on when designing this study. (Waters, 2016). In order to maintain consistency across the participants’ responses, I used a standardized open-ended interview (Turner, 2010). This type of interview design increased consistency across participants by posing identical questions to them while allowing them to speak in as much detail as they can on the questions. The research study began with a comprehensive literature review that was used to inform the creation of my research questions and my data analysis. The sources that were used for the development of the literature review were primarily published within the last 10 years and were selected based on the relevance of the topics and the findings.

I then interviewed two participants who fulfilled the sampling criteria (see below). Prior to initiating the interviews, each participant read and signed an informed consent letter (see Appendix A) that clearly outlined the purpose of the research study and explained that the participants’ names and identifying information would be kept confidential. The participants were informed that they would be informed when the study was presented and published.

Both participants were asked the same set of interview questions and each interview lasted between 45-60 minutes each. The interviews were all audio recorded using a digital audio recording device and were transcribed. The interview questions were designed to encourage the participants to reflect on their use of music instruction in the
classroom, as well as the perceived impact that music instruction had on the academic performance of students with ADHD.

3.2 Instruments of Data Collection

The primary mode of data collection for this research study consisted of a semi-structured interview protocol (see Appendix B). Following Turner’s (2010) suggestions, the interview protocol was prepared prior to conducting any interviews and both participants were asked the same set of questions. The full set of interview questions were provided to each participant three days before the date of the interview to allow the participants to reflect on the questions. The interview questions focused on the participants’ professional background in education, their experience with music instruction, and their perceived successes and failures of music instruction as an educational tool for students with ADHD.

Using this interview style, I was able to acquire data that was comparable across participants and that allowed me to focus on particular themes and ideas that arose during the interview process. The semi-structured interview design allowed me to deviate from the prescribed protocol in order to further examine interesting responses that arose during the interviews. A complete list of interview questions can be found at the end of this paper (see Appendix B).

3.3 Participants

For the purposes of this research study, I interviewed two education professionals who currently work with children and are involved in music education. For the purpose
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of this study, my first participant has been given the pseudonym Fred to protect his identity. Fred is a retired classroom teacher and vice-principal and he currently works as a private music teacher. My second participant, given the pseudonym Miriam in the current study, is currently employed as a full time music teacher in the York Region District School Board.

3.3.1 Sampling criteria. The criteria for participant selection were: 1) involvement with music instruction in their teaching position, 2) involvement with teaching students diagnosed with ADHD, 3) professional training in teaching students with special needs, particularly ADHD, 4) consistent work with students with special needs, particularly ADHD (including both in class and extracurricular activities), and 5) work in a setting in which there is a significant population of special needs students.

It was essential that my participants be involved with music instruction on a regular basis so that their beliefs of the effects of music instruction could be determined over a longitudinal assessment of their practices and their students’ outcomes. A teacher that is not regularly involved in music instruction would not be able to speak to the effectiveness of music instruction with clear justification of their beliefs.

Additionally, these teachers’ regular interaction with students with ADHD was an important criterion because, without this interaction they would not be able to speak to their own experiences and perceptions of music instruction’s effects on these students’ academic performance. By engaging in the music education of students with ADHD, my participants were able to speak directly to their lived experience in the classroom and their perceptions of how music instruction affected the students with ADHD.
I required that my teacher participants were trained in the education of special needs students and had experience in working with students with ADHD because they would be able to apply their knowledge and understanding of ADHD and students’ typical outcomes when considering the potential benefits of music instruction. A teacher who does not have special needs training and experience might not be able to identify the aspects of the students’ behaviour and performance that music instruction could address or fail to address.

Finally, I determined that it was essential that my participants worked in a setting that had a significant population of special needs students so that they would have a large database of students, which they could analyze and refer to when participating in my interview process. This was important because of the variability of effects that ADHD has on children with the diagnosis and I wanted my participants to be able to address the usefulness of music instruction for these children with as much detail and accuracy as possible. I determined that the more experience a teacher has in working with students with ADHD, the more reliable the data they could produce for the purpose of this study.

These criteria were important for the participant selection process because the goal of this research project was to learn how teachers are integrating music instruction as responsive pedagogy for students with ADHD, which serves the greater purpose of developing a more inclusive educational environment for students with ADHD.

3.3.2 Recruitment procedures. In order to recruit participants for my research study, I relied both on convenience sampling and purposive. In my own personal life, I am very involved with music and music related activities (such as singing, playing the piano, and performing in musical theatre). Through the course of my activities I have
developed a fairly large network of people who are music teachers and elementary school teachers. Drawing from my pool of contacts, I applied purposive sampling based on my pre-determined criteria to sample for teachers who fulfilled my particular requirements.

In addition to relying on my own personal network of educators, I posted participant requests on the Facebook pages for the Elementary Teachers’ Federation of Ontario and the National Association of Special Education Teachers (NASET). I provided a general overview of my research study and its purpose, as well as my participant selection criteria in order to enlist participants. I did not receive any responses to my posts requesting participants and so my final participant sample was drawn from my personal network.

**3.3.3 Participant biographies.**

*Fred*

At the time of the research Fred was a private music teacher who worked primarily out of his home. Prior to his retirement, Fred worked as an in class teacher for 30 years in schools in the Greater Toronto Area. Fred also worked as a vice principal in two different schools. One of the schools that Fred taught at during his tenure as a teacher was a school specifically for students with special needs. It was during his position at this school that Fred obtained his special education certification. Fred was also an accomplished musician and had played professionally for many years before turning his attention to teaching. Due to his years of experience as a professional musician, Fred became a music teacher in school and also headed up many extra-curricular music activities. During this time, Fred also taught music privately, which he continued to do into retirement.
Miriam

At the time of the interview Miriam was working as a music teacher in the York Region District School Board. She was born in Ukraine and moved from there to Israel before settling in Canada and beginning her teaching career. She taught music to all the students in her school, from kindergarten through to grade 8. Over the course of her teaching career, Miriam had accumulated over 30 years of experience, which included teaching private piano lessons, music theory, and music history; being the head of the piano department and a program coordinator at the Arcadia Academy of Music. Her experience also included teaching grade 6 homeroom class, which required her to teach mathematics, language, social studies, and science. Miriam had held her current position for seven years, and she was teaching close to 300 students at the time of the research. In her school there was a large proportion of students with special needs identification, approximately 25% to 30% of the student population. In addition to her music classes, Miriam also taught and ran all extra-curricular music activities, including concert bands, jazz ensembles, brass bands, woodwind ensembles, percussion bands, and choirs.

3.4 Data Collection and Analysis

For the purpose of this research study, the data was collected by conducting semi-structured, open-ended interviews with each of the participants. Each interview was audio recorded using a digital audio recording device to ensure complete accuracy for the transcriptions. During the interviews, I also used a notebook to jot down ideas, notes and follow up questions that arose during the interviews.
Following each interview, a transcript was created using the word processing software on a 2012 Macbook Pro computer. The interview recordings were played back and I transcribed them word for word to ensure complete accuracy in the transcriptions. Following the techniques described in Creswell (2013), after both interviews were transcribed into text documents, I read through them both multiple times in order to get a sense of the content of each interview. I then coded my transcripts using a combination of in-vivo codes and descriptive codes (Creswell, 2013; Cashmore, 2015) to identify important quotes or pieces of information that emerged from the interviews. All of the codes that were identified through this process were organized by participant into an Excel spreadsheet.

After all of the codes were input into the spreadsheet, I rearranged them according to common themes or ideas that they spoke to. At this point they were no longer arranged by participant and were instead arranged according to the overall idea that they spoke to. Creswell (2013) explains that data analysis is not a singular, “off-the-shelf” process that can be applied to any research; but rather, it is a unique and individual process that must be devised and applied with deliberate thought and consideration for the purpose and style of the data being analyzed. Following from this understanding, I read and reread both transcripts to ensure that I had captured the most salient aspects of each interview as they related to my research questions. I then began to identify larger ideas that emerged from the individual codes that were identified.

Each of these larger ideas was classified as a category in a separate column of the spreadsheet. When I was developing my categories I reflected on the ideas of Crabtree and Miller (as cited in Creswell, 2013) who stated that there exists a continuum of
categories, from a-priori categories to emergent categories. I believed that the use of emergent categories would be the most applicable style to use for this research study as the previous literature focused primarily on experimental designs with pre-configured hypotheses. For the purpose of this study, I believed that it was essential that the experiences and beliefs of my participants informed the findings rather than pre-existing notions of what might be expected.

Once all the codes had been arranged into appropriate categories, I created a new column that identified over-arching themes that emerged from the data set. Similar to the development of the categories, the themes were developed as they emerged from the data. I then arranged all of the categories, and their corresponding codes and quotes, under the appropriate theme. With all the themes identified, I was able to disregard the data that was not relevant to the study and focus my analysis on the most pertinent data remaining. Creswell (2013) identifies the usefulness of the coding chart for this particular purpose since the interview style of data collection may inherently include unnecessary information. By collecting the relevant data in a chart and discarding the remainder it becomes easier to identify the most salient findings in the data set. This type of organization was helpful in drawing my conclusions from the data and cross-referencing my conclusions with those found in previous literature related to the topic.

Finally, I amalgamated my findings into a cohesive conclusion that incorporated the implications for practical application in the school system. I identify any applications of music instruction that emerged as a useful tool for intervention for students with ADHD and presents follow-up questions that can be studied in further investigations.
3.5 Ethical Review and Procedures

This research study was conducted with strict adherence to the protocols established by the Master of Teaching program at the Ontario Institute for Studies in Education. Throughout every step of the research study, the respect and care for the participants and their identities were always maintained as a top priority.

Prior to engaging any participants in the interview process, they were all presented with a clear description of the study and its goals and any questions or uncertainties were clarified. All participants then read and signed an informed consent form that outlined the details of the study, explained that the participants’ names and any identifying information would be kept strictly confidential, and ensured them that there was no risk inherent in participating in this research study (see Appendix A). Furthermore, participants were informed that they could withdraw from participation in the study at any time with no penalty, even after signing the consent form and giving verbal consent.

All communication that occurred with participants took place either over the telephone or via e-mail, using my University of Toronto email address. Once participants had agreed to participate in the study, a time and place to conduct the interview was decided that was suitable according to the participants’ availability and scheduling.

Three days prior to the arranged meeting time, the participants received a copy of the informed consent letter allowing them to review the letter; ask any questions; and have a clear understanding of the study, it’s purpose, and the interview process. Each participant was asked to sign two copies of the informed consent letter. One copy of the letter was given to the participant and I kept the second copy of the letter. Participants
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were encouraged to ask any questions before, during, and after the interview process to aid in clarification.

Each participant was asked to consent to the interview being audio recorded before the interview began and were informed that the audio recordings would be used to aid in transcription accuracy. Furthermore, the participants were informed that the audio recordings would be kept for five years following completion of the study, at which time they would be destroyed. A copy of the completed study would then be provided to each of the participants.

All of the data that was compiled during the research study, including research notes, interview recordings and transcripts, and e-mail communications were kept on my personal computer and secured with password access. All folders and files containing sensitive material were further password protected to ensure the anonymity of the participants. Due to the fact that my qualitative research study relies on the detailed personal experiences and beliefs of the participants, it is vitally important that there is no way that their responses can be connected to them individually, particularly if their views do not represent the prevailing ideology of the current system. Each participant was assigned a pseudonym and any identifying details were excluded. Furthermore, a necessary aspect of conducting qualitative research involves developing a strong rapport and level of trust between the participants and myself. As a result, it is possible that the participants will reveal deeply personal information during the course of the interviews (Lichtman, 2013). By assuring participant anonymity, it provided the participants with the security that their identities would be kept confidential and allowed them to respond
to the interview questions openly and honestly without fear of repercussion. This, in turn, provides my research with a greater degree of reliability.

### 3.6 Methodological Strengths and Limitations

The biggest strength in conducting a qualitative research study of this nature is that it allows me to discover the real world applications of music education and its effects on the academic performance of students with ADHD from first hand accounts. In this way, I am able to connect and compare the existing literature that describes how music affects academic performance in an experimental setting to the actual perceived affects in the real classroom setting. Furthermore, because I interviewed education professionals currently engaged in teaching and music education, it allowed me to gain insight into the degree of the effects on students’ performance from the people who are most closely associated with it, namely their teachers. This provides my research findings with a greater degree of validity as to the applicability of music education as an intervention tool for students with ADHD.

Another strength of the current study arises from the fact that I utilized a semi-structured interview protocol as the means of my data acquisition. This style of interview utilises a common framework of questions for all participants, which provides a greater degree of accuracy and reliability to my research findings than would an unstructured interview protocol (Turner, 2010).

Additionally, having the opportunity to follow up on responses that arose during the individual interviews, I was able to glean more detailed responses from my participants if it was warranted. This allowed me to probe into areas of thought that may
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not have been a part of my interview protocol initially, but arose in the moment and were deemed to be important for the purpose of this study.

There were a number of limitations during the course of this research study. One of the major limitations was the sample size used in the study. With a sample size of only two participants, there is not enough data to generalize the findings for the population as a whole. A larger and more diverse sampling would provide a greater insight into the possible effects that music education could have on the academic achievement of students with ADHD.

A second major limitation was time. The study was conducted over a relatively short period of 18 months. Given a longer period of time for the study, students’ academic performance and involvement with music education could be tracked through time. This type of longitudinal study would provide a greater depth of insight and linkage between music education and academic success.

A third potential limitation of the study is the lack of students’ voices in the study. The current study relied solely on interviews with teachers (a single research method) to draw conclusions about the utility of music education as an intervention tool for students with ADHD. If the students’ voices could have been included as well, it could have provided a greater depth of understanding into the mechanisms that underlie music’s ability to assist learning across all curriculum areas. The ethical considerations of this research study precluded the ability to include student voices in the study. In my view, students themselves are stakeholders that require attention and inclusion in future research.
A final limitation of this study is also one of voice. In this case it is the limitation of using my own voice to analyze and present the findings of the study. As an aspiring music teacher, my own beliefs and biases inevitably informed my analysis of the interview transcripts and the selections from each interview that were deemed to be pertinent to the study. Acknowledging that it is inevitable that my own beliefs and biases inform my interpretation of my data I provided my participants copies of my transcriptions and interpretations in order to receive their assurance that I had accurately transcribed and interpreted their responses. In this way, I was able to minimize my own bias from influencing my data analysis. Furthermore, I remained cognizant of the fact that my personal beliefs and biases are inherent in research, and I was reflexive of this during the data analysis process. Despite my every effort to minimize this bias, it is impossible to completely eliminate from the study; however, the actions that I undertook served to minimize their impact on my final conclusions and provided my research study with a greater degree of accuracy.

3.7 Conclusion

This study was conducted using a qualitative approach involving semi-structured interviews with 2 teachers, Fred and Miriam. The phenomenological study design was based on the focus on real-world contexts and participant perceptions. Interviews were conducted using a semi-structured interview protocol (see Appendix B). The recorded interview files were transcribed, coded, and analyzed for emergent themes.

As part of the research design process, I reflected on inherent biases in this type of research and reported on the strengths and potential limitations of using the qualitative
research design. As part of this reflexive process, I ensured participant anonymity by assigning pseudonyms to both participants. Both participants were made aware of their rights as participants in my study and were given copies of the signed informed consent form (see Appendix A). I report the study findings in the next chapter.
Chapter 4: Research Findings

4.0 Introduction

In this chapter I present the findings of two interviews that were conducted with two music education professionals. Both participants have spent many years developing their teaching skills and have influenced the social and academic development of many students with special needs over the course of their tenure. I present the findings as a set of themes and sub-themes that emerged from my analysis of the interview data.

There are seven main themes that I identified through analysis of the interview transcripts. These are:

1. Teachers enact responsive pedagogy in music instruction for students with ADHD by providing choice, flexibility, and incremental instruction.
2. Teachers believe that inclusive classrooms provide both positive and negative experiences for students with ADHD.
3. Teachers recognize that music production fosters the socio-emotional development of students with ADHD.
4. Teachers recognize that students with identifications demonstrate a greater degree of success in music classes compared to regular academic classes.
5. Teachers believe that music instruction affects brain development
6. Teachers' opinions differ about the value of cross-curricular music integration to foster ADHD students' academic success.
7. Teachers identify ADHD students’ difficulty in remaining calm and on task as the biggest challenge to their successful teaching practice.
This chapter is organized such that each theme is presented as a section heading under which I present the detailed findings of the main theme. For some of the themes, I identified sub-themes that emerged and these are presented as sub-headings under the main theme. I present the detailed findings of each theme, with the inclusion of participant voices and I discuss the relevance of the findings with respect to the current literature relating to music instruction and ADHD.

4.1 Teachers Enact Responsive Pedagogy in Music Instruction for Students with ADHD by Providing Choice, Flexibility, and Incremental Instruction

When the teachers I interviewed reflected on the methods they employed to enact responsive pedagogy for students with ADHD, a number of strategies were identified that were incorporated into their music instruction classes. Specifically, the teachers recognized the importance of the provision of choice of instrument, flexibility of tasks and assignments, and the use of incremental instruction as strategies that assisted their students with ADHD.

Miriam clearly stated her beliefs about giving students their choice of instrument.

I try to find instruments that benefit their type of needs the most and we work and we go through different instruments until it will click. (Miriam)

In this statement Miriam recognized that students with ADHD have particular needs that need to be met in order for them to become competent and successful in the music classroom and that the type of instrument that they engage with is a key component of addressing their needs.
Fred recognized that different students will employ different strategies to complete a task and, as their teacher, he allowed them to deviate from standard techniques in order for them to achieve success.

It’s like on the piano, right? If you’re playing something and I say, “we’ll use their fingering” and you say, “well I can’t reach”, I’ll say, “ok show me what you’re doing and then we’ll mark it in. (Fred)

This quote underscored the importance that Fred places on providing flexibility in his classroom with respect to the techniques that students employ in order to play a musical piece or learn a musical lesson.

The current findings are also supported in the literature in that studies found that children who are given choice about the topics of study, the materials being used, and the strategies they employ aids in developing motivation to complete the task and gives them a sense of empowerment as they take on learning activities (Jones, 2009). Furthermore, Temmerman (2000) found that when music educators recognize students’ particular preferences, and allow them to work within their interests, it could help them develop positive engagement with musical learning.

Another strategy that the teachers employed in order to accommodate for the specific needs of their students with ADHD was to offer instruction incrementally, rather than expecting entire tasks to be completed in one large chunk. Fred stated that

[it is important] how you present things in a sort of simplified direct way, and maybe in very small bites, because they can’t take in too much at one time. It has to be in very small little pieces and then the next step, right? So if they’re
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doing one thing, let them do that, accomplish it and then go on to the next thing.

This statement suggested that Fred understood that students with ADHD have difficulty focusing on large amounts of material and presented information and tasks to them piece by piece in order to make it more manageable for them to complete.

In a similar vein, Miriam explained that part of success in music production lies in the multiple repetitions of the same piece of music, something that can be inherently difficult for students with ADHD. In order to respond to these students’ inability to remain focused and on task Miriam states,

The repetition is very challenging because it’s a repetition of the same type.

They need to know what they’re doing differently otherwise it’s very, very difficult for them to go on.

Additionally, Miriam states, “they need quick changing of sceneries. Quick changing of tasks.” These statements reflect Miriam’s understanding of the symptoms of ADHD and her efforts to provide a responsive pedagogy for her students with ADHD that allows them to remain engaged with their tasks by ensuring that there is enough variability so that the students are less likely to become inattentive and engage in off-task behaviour.

The findings in the current study related to the findings in Graham et al. (2007) that attributed the difficulties that students with ADHD face in school to deficits in reward processing. By providing material and tasks in smaller chunks, Miriam’s and Fred’s students are able to complete them faster and attain positive feedback rewards from their work more regularly. This could in turn diminish the negative effect of deficient reward processing in students with ADHD.
A final aspect of Miriam’s understanding of how music could be used as responsive pedagogy for students with ADHD arose from an anecdote that she shared about one of her colleague’s practices.

One of my colleagues plays music at the background all day long. She has very calm music in her classroom. She said it helps. They much calmer, they more concentrated. This was last year, she had quite a few ADHD kids in her classroom and her classroom was very difficult last year and she said it calms them down, it helps them to concentrate greatly and they on the task most of the time. (Miriam)

This anecdote described a passive application of music that affects the environment in which the children are learning and Miriam believed that this change of environment could have positive effects on the behaviour and performance of students with ADHD.

This phenomenon is described in the literature in which music therapy helps to inhibit the expression of unwanted behaviours, including aggression, self-injury, restlessness and impulsivity (De Mers et al., 2009; Gooding, 2011). Furthermore, rhythmic clapping and chanting has been shown to help calm down children with ADHD and assisted them in remaining on task for greater lengths of time (Anonymous, 1999; Snow & D’Amica, 2010). This use of music is similar to the way music is utilized in passive music therapies, in which the participants are not actively involved in making music but rather music is utilized to evoke responses from the participants (Rayamajhi, 2013).
Finally, a case study describes a phenomenon very similar to the situation described by Miriam’s colleague. In this study, a 14-year-old boy with ADHD engaged in music therapy sessions that employed the use of background music during study sessions. It was found that this boy was able to increase his focus during these sessions and retain the material studied for longer periods of time (Dunbar, 2014).

4.2 Teachers Believe that Inclusive Classrooms Provide Both Positive and Negative Experiences for Students with ADHD

A common idea that emerged from the responses of both interviewees was that the current state of the education system encourages and expects schools and teachers to integrate all students as much as possible into the mainstream classroom, regardless of ability or disability. The teachers that I interviewed both expressed positive and negative attitudes towards integration and inclusion, in both music and general education classes. Regarding students with ADHD, Miriam put it best; “They are in every class. There are lots of them. Identified or not.” According to Brault & Lacourse (2012), ADHD is one of the most commonly diagnosed disorders among school age children and their inclusion in the classroom is a fact that all teachers have to be ready to handle.

Fred stated that the idea of full inclusion in the classroom could be a “double edged sword. In some instances it’s a good thing because they have a chance to come up to a certain level, but in other ways it must hurt them socially.” He believed that the inclusion of children with ADHD into the mainstream music classroom provides them with the opportunity to participate in the full curriculum with their peers and develop to the same level of competency; however, the symptoms of ADHD and their expression in
the classroom can also hinder these students’ social development as they are seen as troublemakers by their peers.

Fred also stated, however, that including students with ADHD in the mainstream music classroom is good for their achievement because he believed that everybody can learn the mechanics of an instrument and “but it certainly gives them the opportunity to be with a group of people and feel like they belong in a band, or like a group.” In saying this, Fred underscored the importance of giving students with ADHD the chance to develop feelings of inclusion and belonging in a class with their non-ADHD peers. This belief corresponds with Ballantyne and Mills’ (2007) study that found that teachers believed that inclusivity in the music classroom means giving all students a chance to participate, to feel included in the group, and to feel like they are able to produce a successful final product.

Miriam also believed that including students with ADHD in her mainstream classroom had beneficial outcomes. Specifically, she acknowledged that they are able to help younger or less accomplished peers develop skills on their instrument of choice.

Sometimes it’s a good thing, if it’s a beginner level. Like 5/6 class when grade 6s … started to play, some [of] them started to play last year, but they did not achieve much yet, so they help their very, very beginner classmates to start their instruments. (Miriam)

Jones (2009) found that students, in general, become more engaged in learning when they can choose collaborative partners compared to situations where their teacher assigns them to groups or tasks. This relates to my findings because it suggests that students with ADHD that have developed competency with their instrument can become more engaged
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in their education by having the opportunity to collaborate with peers who play the same instrument. This supports Miriam’s recognition that the collaborative nature of music has beneficial effects on the engagement and success of the students in her class.

Fred made a final point on the methods of inclusion that he employed in his teaching practice. He recognized that there are standard ways of playing a particular piece of music, or standard techniques for playing a particular instrument; however, not all students are able to do things in the standard way. Instead, Fred allowed his students to work in whatever way was best or easiest for them.

It’s like on the piano, right? If you’re playing something and I say, “we’ll use their fingering” and you say, “well I can’t reach”, I’ll say, “ok show me what you’re doing and then we’ll mark it in. (Fred)

In this quote Fred recognized that not everyone is able to complete the same task in the same way and that it is ok to allow students to approach problems and tasks in ways that are comfortable for them and that permit them the opportunity to succeed. This attitude reflects Ballantyne and Mills’ (2007) finding that all students should be able to feel competent and that they have achieved something in the music classroom.

4.2.1 Teachers' belief that instrument preference fosters engagement with and enjoyment of the music curriculum stems from their personal music education experiences. A finding that emerged from both of my interviews was the teachers’ belief that students in a music education program should be given a choice as to what instrument they want to learn. This finding corresponds to the overall theme of inclusion because, just as students should be given the freedom to engage in tasks in ways that are
comfortable to them, similarly they should have the freedom to choose an instrument with which they feel comfortable learning and playing. As Fred stated in his interview,

My dad, he was a professional musician, so he had me on violin. So I was taking violin lessons from the conservatory. I really did not like violin very much so I went to piano, and I did piano for, up until, gosh, up until I was in university. And then trumpet was my instrument of choice and so I got my degree from the conservatory in trumpet. And I played professionally. I did all kinds of different work and then I took conducting classes. (Fred)

In a similar vein, Miriam also encountered difficulty with her music education until she was able to move into an area of her own preference.

I never had an interest in music. I never had an interest in teaching, while I was acquiring this profession. Every day of my professional music training, I [had] been forced to do so. My interest came way way way later when I start as an adult and after quite few years of private teaching. [I]t was actually in Toronto, we moved to Toronto and I start[ed] working in [a] music academy and they let me teach theory and that’s what I LOVED teaching. And that was “Whoa I’m enjoying it, finally!” So yeah, that’s how my interest developed.

(Miriam)

Both of these quotations indicate how Fred’s and Miriam’s interest in music and music education were not fully realized until after they had been given the opportunity to delve into new instruments and areas of study that were of interest to them.

Miriam employed a strategy that is supported by findings in the literature in order to assist the successful engagement of her students with ADHD, she provided students
with their choice of instrument and allowed them to change to a different one if it was not working out for them.

I try to find instruments that benefit their type of needs the most and we work and we go through different instruments until it will click. (Miriam)

In the literature, Jones (2009) found that giving students choice about the topics they study, the materials or instruments they can use, the development or choice of their own strategies, and their choice of work partners empowers and motivates them in their own learning process. Furthermore, Temmerman (2000) states that it is important for music educators to be both cognisant of and to utilise children's preferences for certain musical activities when developing, implementing and evaluating musical programmes if musical learning and a positive (life-long) interest in music is to occur (p.52).

This process of trial and error that Miriam employs is a strategy that aligns with the literature findings that suggest that taking student preference into account fosters their competent participation in her music classroom.

Miriam’s process of giving students a variety of instruments to choose from also helped to free them from potential constraints that may inhibit their engagement with the instrument or with the class due to other factors, such as gender. The research has shown that there are gender differences in instrument preferences; boys tend to gravitate towards trumpet, low brass, and percussion instruments whereas girls tend to gravitate towards flute and clarinet as their instruments of choice (Harrison, 2007). By allowing her students to choose their preferred instrument and to change it if it is not working out,
Miriam did not constrain any student to an instrument that they are not enjoying and engaged with.

**4.3 Teachers Recognize the Socio-Emotional Difficulties Faced by Students with ADHD**

A finding from my interviews highlighted an understanding that teachers possess: students with ADHD tend to suffer from socio-emotional difficulties, such as anxiety and depression, as a result of their disorder. In support of this finding, Miriam stated, “…they do not want to create all this mayhem that they do create. They suffer from it”. Fred also supported this belief in his interview in which he stated, “These kids with ADHD also have other issues, because they feel inferior to the other children in the classroom”.

The beliefs of these teachers is also supported in the research literature which has found that there is a high incidence of co-morbid depression and anxiety disorders among children with ADHD, that are thought to be caused by the children’s suffering and difficulty of living with ADHD (Silver, 2006). Additionally, Sagall (2014) found that the negative self-image that students with ADHD develop could lead to a greater incidence of mental and physical health problems and anti-social personality disorder.

**4.3.1 Teachers observe that ADHD students’ success in the music class helps develop a greater sense of confidence and pride in their abilities.** Both of the participants that I interviewed recognized that students with ADHD are able to be successful in music classes and that this success is an important source of pride and self-confidence, which can help to counteract the self-esteem issues that students with ADHD often struggle with. A couple of quotes from Miriam and Fred help to emphasize
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teachers’ understanding of how music education can play a key role in the development of socio-emotional skills in students with ADHD.

… it’s an area, because this is hands on, they can be successful, more successful, than in academic subjects in this area. And they can feel proud and successful. (Miriam)

[T]hey hear what they’re doing and they get really a lot of pleasure and gratification out of that and I think it builds their confidence and helps them in other ways. Especially if you can get them into some of the extra curricular activities. (Fred)

Furthermore, they noted that the success that students with ADHD experience in the music classroom can become a driving factor that motivates them to continue going to school and engaging in their education, despite their lack of successful experience in other academic subjects. Fred, for example, stated, “I know a lot of instances where kids would come to music, and that was why they were coming to school, to stay with the music.”

Fred’s quote is supported in the literature which found that performance based music therapy is associated with reducing children’s negative self-image and lack of motivation (Snow & D’Amica, 2010) and musical training is positively correlated with more positive self-concept and self-esteem, mood, concentration, and empathy (Čebulc et al., 2009; Degé et al., 2014). My findings suggest that music instruction in schools can provide an engaging environment that fosters the development of a positive self-image and confidence among students with ADHD.
4.4 Teachers Recognize That Students With ADHD Identifications Demonstrate a Greater Degree of Success in Music Classes Compared to Regular Academic Classes

In order to explain the previous finding that showed that music education provides a sense of pride and accomplishment for students with ADHD, another finding was identified that suggests that students with ADHD exhibit greater achievement in the music classroom compared to their levels of achievement in other academic subjects. Miriam stated, “For some kids, especially identified kids … I found, I don’t know why, but 99% of them are hugely successful in music.” Additionally, Fred said that in his experience “it was just amazing what we produced and what these kids produced, really because it was them.” These findings are especially interesting to me because I was unable to find anything in the current literature that stated that students with ADHD tend to perform better in music classes than in general education classes.

What I was able to find in the literature that can be related to this finding is that children with ADHD tend to exhibit academic deficiencies not due to a lack of intelligence, but rather as a result of their high levels of inattentiveness and restlessness that are cause by the disorder (Daley & Birchwood, 2009; Loe & Feldman, 2007). This finding from the literature suggests that students with ADHD should be capable of achieving success in academic classes on par with their achievements in music class when we control for the symptoms of ADHD. Based on this idea, my finding suggests that music class provides something to students with ADHD that enables them to overcome some of the debilitating aspects of ADHD in order to achieve success that regular academic classes do not. So what does music offer that regular academic courses cannot? Miriam believed that one of the most effective aspects of music instruction is that
“Music is hands on, which is huge for ADHD kids. They’re already doing something just by holding the instrument and pressing something on it”. What I understand from Miriam’s comments is that the actions involved in making music from an instrument require a significant amount of manual manipulation of the instrument, and the hands-on nature of playing an instrument is a particularly effective means of coping with the symptoms of ADHD.

In addition to the hands-on nature of music making, the acoustic nature of music production provides students with ADHD with instantaneous feedback on their efforts. Fred believed that this is a vital aspect of music instruction, compared to the regular academic instruction, in that “music is one of these things that, if you do something, you hear right away what you’re doing… it allows them to achieve something instantaneously”. What this represents to me is the fact that the act of making music produces an instantaneous result, a song, that the child with ADHD can hear and receive instant feedback on. Compare this to traditional mathematics instruction, in which I have heard many students throughout my life exclaim, “When am I ever going to need to calculate the hypotenuse of a right triangle in the real world?” This example serves to illustrate the delayed gratification that may only come many years after education has ended for some subjects. Fred’s statements are corroborated by the findings of Graham et al. (2007), who found that many of the difficulties encountered by children with ADHD could be attributed to deficits in reward processing and working memory. Reward processing involves the ability to predict and extract reward information from environmental stimuli (Miyapuram, 2008). With regards to students’ academic performance, it is more difficult to predict the potential reward from mathematics as
“something that will come in handy in the future” as compared to the instantaneous reward of hearing a song that is produced in the music class. As a result, a student with ADHD might be better able to appreciate the value of his or her effort in music class when the rewards are obvious and instantaneous and therefore adjust his or her behaviour to produce more of the desired outcome.

4.5 Teachers Believe that Music Instruction Affects Brain Development

In my interviews, both of my participants made similar statements regarding the effects that music instruction has on the brain’s development. Fred stated, “[Music] is something that develops the brain, because you’re using your left and right side.” In comparison, Miriam stated, “In regular school system it just another side of education. Just another half of the brain that being put to work.” Both of these quotes demonstrate my participants’ understanding that the different areas of the brain develop differently based on the type of experiences in childhood. However, it is important to note that most neuropsychologists consider the left/right brain functional distinction to be a myth, and rather different regions on both sides of the brain are involved in the various neurological processes.

Research of functional brain activity has been conducted that supports the belief that music instruction has a positive effect has on brain development. Functional magnetic resonance imaging (fMRI) scans comparing musically trained individuals to untrained individuals demonstrated that those individuals with musical training exhibited greater levels of activity in the left fusiform gyrus and the prefrontal cortex, areas of the
brain implicated in mathematical processes and understanding (Schmithorst & Holland, 2004).

These findings are logical in that music is a highly mathematical construct that is based on a very particular set of mathematical ratios and fractions. Fred spoke directly to this connection, stating, “It’s very mathematical and a young person, let’s say in, I don’t know, maybe grade 4 or 5 would get that.”

While brain development does not necessarily progress in the dichotomous manner that was traditionally believed, it is important to recognize the teachers may still consider brain development in this way and this could inform their teaching strategies and their beliefs regarding the value of a musical education. Furthermore, it is important to note that, despite neurological development occurring along a different scheme, musical training has been shown to promote greater development in brain regions associated with mathematical processes and understanding.

4.6 Teachers' Opinions Differ About the Value of Cross-Curricular Music Integration to Foster ADHD Students' Academic Success

One of the key emphases in Ontario’s current education system is the push to integrate multiple subjects into singular lessons in order to deliver a more rounded education to the students. The two teachers that I interviewed had differing opinions on the ability and validity of integrating music education into other academic subjects.

Fred believed that music is a subject that has far reaching applications in multiple subject areas including physics, mathematics and language. Here he elaborates on the range of possibilities:
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It can be used for mathematics at the lowest level and it can be used for physics at the highest level. Just to teach the way a sound comes out and measure that sound in physical terms. It can be used at the high school level and the primary level. History is another one. Vocal music is, you could really talk about English pronunciation, diction, the way the words come out, the composition of sentences. So English, history, physics and even math. I was thinking you know, the cycle of fifths, and showing a drawing of the fifths, of each key and how it all works out. It’s very mathematical and a young person, let’s say in, I don’t know, maybe grade 4 or 5 would get that.

Fred also believed that other academic subjects could be integrated into the music classroom: “[H]ow did I introduce other subjects into the music? Because I was a full time music teacher. So I would introduce the history of music, I would talk about the theory.”

Since music is constructed in a very mathematical manner, consisting of particular frequency ratios to produce the consonant and dissonant harmonies and rhythms that follow regular patterns (Harris, 2008) as well as the fractional structure of rhythms and note durations, the study of musical structure lends can be incorporated into aspects of the mathematics curriculum, such as the study of fractions and ratios. Furthermore, fMRI studies have shown that the brains of musically trained participants exhibit greater levels of activation in the prefrontal cortex and left fusiform gyrus, compared to untrained control subjects, when performing mental arithmetic (Schmithorst & Holland, 2004) suggesting that the participants’ musical training had a positive effect on their mathematical abilities. In the realm of literacy and reading skills, research has shown that
students with formal musical training develop stronger reading skills and performance in the arts curriculum through the primary grades (Hogenes et al., 2014; Lessard & Bolduc, 2011; Wilkinson, 2013). These findings all serve to support Fred’s belief that music instruction has a strong basis for inclusion in cross-curricular integration.

In contrast to Fred’s beliefs, when I asked if there are opportunities for music to be included in other curricula, Miriam stated, “I don’t think there is [opportunities for music education in the curriculum]. No. I really don’t think so.” Upon further reflection she did change her mind slightly and warmed to the possibility that music could be included in social studies lessons on other cultures: “Maybe social studies, when they talk about different cultures, they talk about music.” I understood this to mean that the social studies teacher could introduce the concepts of different styles of music that arose in different cultures around the world.

Miriam saw the music classroom and the music curriculum as something separate from the mainstream academic subjects. In her words:

In terms of schooling, like regular schooling, it is a different, a change of setting, and change of activity, which provides a break from the classroom activity, from regular classroom activity.

In this regard, Miriam recognized that students with ADHD need a break from their regular academic classes and in her classroom these students are able to receive this break and participate in different types of tasks. This belief relates back to Miriam’s statements that music is an inherently hands on and active subject that provides students with ADHD a chance to engage in a different range of tasks and activities than what they experience in their regular academic classes.
4.7 Teachers Identify ADHD Students’ Difficulty in Remaining Calm and On Task as the Biggest Challenge to Their Successful Teaching Practice

Considering what is known about the symptoms of ADHD, it is not surprising that the teachers that I interviewed considered that the biggest challenges that students with ADHD face are remaining calm and staying on task during lessons. Miriam further explained that in her music class, a significant factor that might contribute to the students’ difficulty in staying on task is, “when it comes to music, to perfect a piece of music you need to repeat this piece of music, and you need to repeat it numerous amounts of time and that’s a challenge for kids with ADHD” (Miriam). Miriam further explained that, to engage these students in the repetitious activity, the teacher needs to explicitly explain to the students what they must do differently with each repetition so that it is not simply a repetition of the exact same thing multiple times. What Miriam means by this is that rather than asking the students to play the exact same thing over and over again, they can be better engaged in the music if she gives them explicit instructions about how to play it differently each time. For example, she might say to the student, “next time you play this piece, try playing it a little slower and softer”, or “try playing this section of the song louder and with more force next time.” By making these minor adjustments to the expectations for each play through, Miriam provided the students with ADHD a new aspect of the music to focus on, rather than simply repeating the same thing ad nauseam.

By explicitly explaining what the student needs to do with each repetition, Miriam was able to develop unique goals for each repetition that can provide feedback to the students as satisfaction with their performance. It is important to note that the feedback that Miriam offered with each repetition was not meant as a form of correction or
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punishment, but rather as a means of approaching the music from a slightly different perspective. This factor can be related back to the findings of Graham et al. (2007) who determined that the symptoms of ADHD might be attributed to deficits in reward processing. The actions undertaken by Miriam in her music class serve to continuously divert her students’ attention and focus back to the task at hand and give them a new opportunity for success and reward, counter to the effects of ADHD which tend to cause students thoughts to wander away from current tasks (Daley & Birchwood, 2009; Loe & Feldman, 2007).

In Fred’s experience, the repetitive nature of perfecting a piece of music is not the primary difficulty that students face in his class but rather their ability to remain seated and complete worksheets or writing activities. “To sit down and write it is not always the same outcome. It’s harder, I think, for them” (Fred). Fred stated that, “their attention span was very different. They would move about a lot. Some of them had responses that were physical.” Fred identified the symptoms of restlessness and hyperactivity as the biggest challenge that students with ADHD faced in his classroom, particularly when engaged in non-performance oriented work.

Fred described many students that would not be able to remain seated to complete their written tasks so he also devised a method to counter the symptoms of ADHD and elicit a greater degree of on task behaviour from his ADHD students. He explained, “[T]he communication skills and how you present things in a sort of simplified direct way, and maybe in very small bites, because they can’t take in too much at one time” (Fred). The technique that Fred employs, of directing students to their tasks in small chunks at a time rather than as one large assignment, is similar to the idea behind
Miriam’s continual redirection of focus. Both of these techniques employed by the teachers I interviewed are intended to counter the hyperactive and impulsive behaviour caused by ADHD that can lead to outbursts of physical activity (Daley & Birchwood, 2009; Loe & Feldman, 2007).

4.7.1 Teachers recognized that the behavioural symptoms associated with ADHD create a distracting environment that can negatively affect the performance of other students in the class. The discussion on the difficulties faced by students with ADHD helped me to identify another finding in the current study: the physical and vocal outbursts that students with ADHD exhibit do not only distract them from their own work, but also are a large source of distraction for the other students in the class. According to Miriam, “They might just all of a sudden, just shout out something or talk to their neighbour”. Or as Fred stated “some of them would not know quite when to speak and when not to speak”. According to the teachers that I interviewed these outbursts of random, off topic vocalizations were a large distraction to the students around them and would detract from the lesson as a whole as the teachers would have to stop the lesson to rein in everyone’s attention. This problem that both teachers identified can be related back to Fred’s statement regarding inclusive education in that it is a “double edged sword”. Because these students are included in the mainstream classroom, it is necessary to devise means of subverting the symptoms of ADHD using techniques such as the ones that Fred and Miriam described above. By taking steps to increase on task behaviour, teachers attempt to minimize the disruptive outbursts that can have detrimental effects on other students’ education.
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Miriam discussed the reduced incidence of negative behaviours exhibited by students with ADHD in her classroom compared to the same students’ behaviour in other academic classes, which suggests that some aspect of the musical activities may serve to decrease the undesirable behaviours associated with ADHD. “That is very consistent. I have less problem with ADHD children in the music room than regular subject teachers have them in their rooms” (Miriam). Findings in the literature that support the beliefs of Fred and Miriam show that performance-based music therapy resulted in a significant decrease in destructive and distractive behaviours, such as hitting and screaming (De Mers et al., 2009), which could potentially be applicable in the music classroom as well.

4.7.2 Teachers did not believe that students’ lack of confidence and social skills negatively affects academic performance. A thought that I had in mind when developing this study and the interview protocol, surprisingly, did not emerge from either of my interviews. Specifically, neither Miriam nor Fred spoke explicitly about the impact that a child’s self-confidence and social development has on their academic achievement. This is significant because it is known that a child’s self-concept is strongly associated with their academic performance (Degé et al., 2014) and, while both of my participants recognized that music education provides multiple social and emotional benefits to students with ADHD, they did not make the connection between these important aspects of children’s identity and their ability to succeed in school.

While my participants did not explicitly address the link between self-esteem and academic achievement, I believe that they did recognize the important connection
between these factors. I inferred this understanding based on my conversations with each participant and from the following quotes:

I was teaching music with goals in mind, set goals in mind. First of all, of course to have them play. Secondly, to be able to perform after a certain period of time, to build self-confidence, to build a group that felt like they were a team, that they could work together, that they could help each other out. (Fred)

[T]hey do not want to create all this mayhem that they do create. They suffer from it. They need support. They need understanding. And they need guidance in order to function in the classroom, and that’s the most important thing with them. (Miriam)

From these quotes it is clear to me that while the teachers did not directly address the connection between self-esteem and academic achievement, they intrinsically recognize that they are linked. Based on this innate understanding, they applied their beliefs and strategies in ways that served to bolster their students’ self-esteem as well as provide them opportunities for academic success.

4.8 Conclusion

In this study, I interviewed two music teachers who are both currently involved in regular music instruction. Over the course of two interviews I was able to identify seven themes that these teachers discussed that inform and affect their teaching practices for students that have ADHD. Creating an inclusive classroom environment in which students of all ages and abilities are given the opportunity for equitable participation and
the ability to achieve success is an important foundation for both Fred’s and Miriam’s teaching practice. Furthermore, through their own experiences as music students, Fred and Miriam recognize that giving students with ADHD a choice of instrument provides them with a greater incentive to become engaged with the music class.

With regards to the socio-emotional development of students with ADHD, my participants believed that the benefits that music production instils in children with ADHD allows them to develop greater confidence and self-esteem, which carries through to other academic classes as well, providing an avenue for greater academic achievement. While Fred and Miriam disagreed about the extent to which music instruction can be applied in a cross curricular manner, there is evidence from the interviews and the literature, that incorporating music in other academic classes, either in an active or a passive manner, may provide students with ADHD an avenue to foster greater degrees of academic success. Finally, it is important to recognize that my participants felt that the symptoms and behaviour exhibited by children with ADHD do not hinder only their own achievement in school, but can also be a hindrance to their peers when physical and vocal outbursts create distracting environments.

The findings that I have presented herein contribute to the existing literature by providing phenomenological explanations of the effects that music instruction has on the academic performance of students with ADHD. Fred’s and Miriam’s experiences and insights suggest that the findings that have come out of laboratory and extra-curricular research also apply to the abilities and performance of students with ADHD in school settings. Furthermore, the results presented herein also serve to support the literature that
explains how ADHD negatively affects student performance, and offers potential explanations as to how these deficits might be overcome.

In the next chapter, I discuss the significance of the findings for teachers, students, and for their classrooms. Finally I describe what I believe future research should address considering the current state of the research and the findings from the current study.
Chapter 5: Implications

5.0 Introduction to the Chapter / Overview

In this chapter, I present a brief overview of the findings from Chapter 4 and discuss their significance for myself as a teacher and researcher and for the educational community as a whole. I then present potential implications of these findings in both a broad sense, how they can affect the educational community as a whole, and in a narrow sense, how they may affect me as a teacher and a researcher. From there I present some recommendations based on my findings and the implications I have presented. Finally I suggest potential areas for future research to further the literature in this field and I will close the chapter with some final concluding comments.

5.1 Overview of Key Findings and their Significance

In chapter 4 I identified 7 themes that emerged from the analysis of my interview data. This section addresses each of these themes in relation to the primary and subsidiary research questions that I posed at the outset of this study. I present each research question as a subheading and describe the findings and themes that relate to it.

5.1.1 How are teachers implementing music instruction as responsive pedagogy for students with ADHD? The first theme presented findings that addressed my primary research question. These findings demonstrated that teachers employ various techniques and strategies in their music classroom as responsive pedagogy for students with ADHD. These strategies included providing the students with their choice of instrument, flexibility in the strategies that the students use to achieve their goals,
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flexibility in the type of tasks that the students engage in, the use of incremental instruction, and the use of background music as a passive tool to create a calming environment for the students to work in. The teachers interviewed identified these strategies as effective interventions that allowed their students with ADHD to achieve a greater degree of academic success.

5.1.2 From these teachers’ perspectives, what effect does music instruction have on the academic performance of students with ADHD? My third theme describes the social and emotional difficulties that teachers identified as problems that their students with ADHD face, as a result of the behaviour that is caused by their diagnosis. Specifically, the students recognize that they perform behaviours that are undesirable and their inability to control them causes their self-esteem and mental health to suffer. Teachers report that students with ADHD are able to achieve greater success in music class, which helps bolster their feelings of confidence and pride.

In line with these findings theme number four documented that students with ADHD tend to perform better in music class compared to their performance in other academic classes. The teachers reported that this is the case because music production is a hands-on activity, which gives the students with ADHD something to manipulate and that music making provides these students with instantaneous feedback on their performance. These unique facets of music offer students an avenue to success that is often unavailable in regular academic classes.

My fifth theme identified the understanding that teachers have that music education is implicated in children’s neurological development. While the teachers
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interviewed held the traditional belief in hemispherical asymmetry, which has been shown to be inaccurate, research into brain function has demonstrated that music education does indeed result in greater development and activation of neuronal areas associated with mathematical reasoning (Schmithorst & Holland, 2004). As a result, the teachers believed that music instruction could have beneficial effects on the cortical regions associated with academic performance.

5.1.3 What are these teachers’ perspectives on the potential of music instruction as responsive pedagogy for students with ADHD in mainstream classroom settings? Under my first theme, Miriam presented a colleague’s anecdote that spoke to the applicability of music in mainstream classrooms. Her anecdote spoke to the use of passive background music, rather than explicit music instruction, as a means of creating a calming environment that the colleague reported helped her students with remaining on task and reducing the unwanted behaviours that are common with ADHD.

Also related to this question were the teachers’ beliefs regarding the inclusion of students with ADHD in the mainstream classroom. Fred and Miriam expressed that inclusion can present both positive and negative effects for students with ADHD. Some of the positive benefits include the opportunity to succeed at the same level as their typically developing peers. Furthermore, Miriam even identified that students with ADHD are capable of achieving a greater degree of success in the mainstream music classroom as compared to mainstream academic classrooms.

Another belief that was expressed by the teachers was that the students’ success in the mainstream music classroom has benefits on their social and emotional development.
By performing at the same level as their peers, and achieving real success in school, they develop a greater sense of self-confidence and competence in their abilities, which could transfer to their performance in traditional academic classrooms.

5.1.4 How are these teachers integrating music in a cross-curricular manner to facilitate academic achievement for students with ADHD? One of the most interesting findings that emerged from my study was described under theme six: teachers differ in their opinions regarding the ability to integrate music education in a cross-curricular manner. Fred established a belief that music can be connected in various ways to all other subjects, particularly mathematics and physics; whereas, Miriam did not believe that music has much applicability with other subject areas. Miriam did identify however, that background music in regular academic classes can be useful in helping students with ADHD remain focused and on task.

The next section of this chapter will discuss the implications of the findings described above on broad terms for the educational community, and on narrow terms for me as a teacher and researcher.

5.2 Implications

The findings presented in chapter 4 have some important implications that the educational community and for me, as a teacher and researcher. It is important to recognize that the beliefs of Fred and Miriam may represent the beliefs of many other teachers who work with students with ADHD and these beliefs can have serious repercussions on the academic and social development of these students. Furthermore,
the techniques and strategies that Fred and Miriam described in this study can be studied, implemented and assessed as to their usefulness in fostering successful development of students with ADHD.

Based on the findings of my study and the discussions that I had with my participants, I have developed a deeper understanding of the types of difficulties that teachers face when teaching students with ADHD, as well as the difficulties that the students themselves face when working in inclusive classrooms.

5.2.1 Broad: The educational research community. Members of the educational community can draw important conclusions from the findings of my current study. Primarily, it should be important for members of the community to recognize that students with ADHD are capable of overcoming some of the debilitating symptoms of ADHD in order to demonstrate success when they are involved in music education.

Additionally, the findings presented in this paper support my personal belief that music education should be maintained as an integral component of children’s education. I have heard a lot of discussion regarding the necessity of music education for children and the lack of funding and resources to provide them with an adequate music education. I believe that findings such as those presented herein, serve to support the notion that music education has real, observable benefits on the academic performance of students with ADHD, and that these benefits should not be up for debate.

A final implication that I feel is important for the educational community is the fact that students with ADHD are able to achieve higher levels of success in music education than in other academic subjects. Research has shown that students with ADHD
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do not suffer from lower intelligence, but rather that the symptoms of ADHD prevent
them from fully applying their intelligence to their tasks (Daley & Birchwood, 2009; Loe
& Feldman, 2007). Based on these findings and the observations of my participants, the
educational community should recognize that students with ADHD are capable of
succeeding academically, at the same level as their peers, provided that their particular
needs are met.

5.2.2 Narrow: My professional identity and practice. With regards to myself as
an educational researcher, the findings that I have described in this paper have supported
my initial beliefs that music education is beneficial to fostering success in students with
ADHD. With these results in mind, I feel that it is necessary to apply my knowledge as a
researcher into my own practice as a teacher. By continuously making observations of the
performance of my students, I can continue to refine my own pedagogical practice to
better support my students with special needs, be it ADHD, learning disabilities, or any
other specific needs of my students.

Furthermore, I believe that it could be beneficial to apply some of the techniques
and strategies that my participants have described in my own teaching practice. Strategies
such as free choice of instrument and playing background music during in-class activities
can help my students become more engaged with their tasks and assist them in remaining
focused and on task.

Another way that my findings will inform my teaching practice is based on the
findings of Graham et al. (2007) and what I described in this study. By recognizing that
deficits in reward processing have been implicated in the negative academic performance
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of students with ADHD and the finding that music instruction provides instantaneous rewards, I can apply this concept to my general teaching practice by ensuring that my students have clearly defined and obvious feedback of their performance and behaviour in school. By providing this feedback in as timely a manner as possible, students with ADHD will be better able to adjust their behaviour in order to receive the reward from their effort. Overall I believe that this will result in greater academic achievement, both in music and general education classrooms.

5.3 Recommendations

The findings from my interviews suggest that the hands-on nature of music making is one of the primary aspects that permits students with ADHD to engage with the assigned tasks and produce a product that is successful and on par with their peers. This key finding can potentially be extrapolated to other academic subjects as well. By incorporating more hands-on activities in other academic subjects it is possible that students with ADHD will be able to produce more successful work than they could using traditional pencil and paper tasks.

Another suggestion that can have significant ramifications for the academic success of students with ADHD is based on the finding that these students tend to perform better when given free choice of instrument. By incorporating choice of task and choice of method into students’ education, it is possible to elicit a greater degree of engagement from them, which, in turn, could produce greater academic success. This could be applied to both music education classes as well as other academic classes in which these students are enrolled.
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For those teachers that may not have the desire or ability to implement music instruction in their classroom, it can be useful to incorporate background music during other subject tasks. The evidence that my research added to the body of literature suggests that even the passive engagement with music can help students with ADHD remain focused and on task which, in turn, can elicit stronger academic performance (Rayamajhi, 2013).

Based on the understanding that students with ADHD are at greater risk of developing mental and social disorders (Sagall, 2014), I believe that it is essential for teachers to provide students with plenty of collaborative musical activities that research has shown to help foster the development of stronger social skills (De Mers, et al., 2009) and self-confidence (Snow & D’Amica, 2010; Wilkinson, 2013). Activities such as extra-curricular bands, full class recitals, and group composition and performance assignments can provide students with ADHD the opportunity to regularly be part of a larger community that has a singular objective. This type of arrangement will foster their social skills and provide them with equal opportunities to succeed in the classroom.

The Ministry of Education and education administrators can also make use of the findings of my study to further the education and development of students with ADHD. By recognizing the beneficial impact that music education has on the performance of students with ADHD, these entities can develop professional development programs that can assist teachers in learning how to implement musical activities in their everyday classes. These programs could focus on providing all teachers with techniques and strategies to incorporate music instruction across the many different curriculum areas, as well as ways to provide immediate feedback for students’ work in music and general
education classes. Another area of professional development could be to help teachers develop assignments that provide a greater degree of flexibility and choice of task for their students to choose from. For example, in a social studies class, rather than requiring all students to write a report on a particular topic or unit of study, students could have the choice to write a report, compose a song, or perform a skit to demonstrate their knowledge and understanding. This kind of differentiation would provide students with ADHD to choose a modality that best suits their learning style and needs in order to present a successful end product.

Making musical understanding, as well as the benefits that music education has been shown to produce, more widespread among the population of teachers can provide students with ADHD more opportunities to be introduced to the type of education and the types of activities that have the potential to elicit their greatest academic response.

5.4 Areas for Further Research

The most immediate area that I identified in which future research can enhance the body of knowledge in this field would be to conduct a study similar to my current study but with a larger field of participants. By including the voices of more teachers that teach in and around Ontario it would be possible to develop even greater insight into the benefits that music education can provide students with ADHD. Furthermore, a larger field of participants would also address the issue that I encountered in which there is a difference of opinion regarding certain issues, such as cross-curricular integration.

A question that arose for me through the completion of this study was whether different types of musical activities elicit different responses from students with ADHD.
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This question led to another idea for future research, in which researchers could study various types of music education tasks in order to evaluate if there are certain tasks that students with ADHD excel at over others within the musical domain. For example, a study that compares student performance of a pre-composed piece of music versus that of a student-composed piece of music could shed light onto the effects that the creative aspect, or ownership, of a piece of music has on student engagement and performance. A study such as this could potentially help teachers and policy makers develop more robust music education curricula based on the types of activities that elicit the greatest engagement and performance from students.

Lastly, another important area that music education research could address would be the effects of music instruction on the academic performance of students with other diagnoses, such as autism, developmental delays, or learning disorders. The findings in my current study suggest that music instruction has beneficial aspects that support students’ social as well as cognitive development. These ideas can be further explored and expounded by examining their applicability to a larger range of students and abilities.

Findings from these potential studies, combined with the current findings and the pre-existing body of literature could be utilized by ministries, administrators, and teachers to develop the strongest, most effective music education program to enhance the academic success of the greatest number of students.

5.5 Concluding Comments

ADHD is one of the most commonly diagnosed disorders among school age children (Children’s Mental Health Ontario, 2015) and its prevalence has been shown to
be steadily rising over time (Brault & Lacourse, 2012). In light of the current trend of working towards full inclusion of special needs students into mainstream classes, it has become ever more important for teachers and educators to develop and implement effective interventions. This study identified aspects of music instruction that music teachers recognized as being useful in responding to some of the detrimental effects of ADHD on students’ academic performance. By applying the findings discussed in this paper, it is possible to provide more effective education for students suffering from ADHD.

This study found, overall, that music education provides students with ADHD opportunities to achieve success that they may not have otherwise have realized. This success helps them to develop a greater sense of confidence, competence, and belonging that may not be possible in other academic classes. Additionally, music making is a hands-on activity that engages students in an activity that provides them with instantaneous feedback on their performance. Teachers observe that students that are given free choice of instrument become more engaged with music making and exhibit fewer of the undesirable behaviours associated with a diagnosis of ADHD. For teachers that do not actively teach music making, it was suggested that playing background music helps students with ADHD retain their focus and stay on task in other academic classes.

The findings of this study are significant because they provide insight into aspects of the education system in which students with ADHD are able to achieve success, and these successes can be instrumental in the development of healthy self-esteem and feelings of competence and belonging. The research conducted herein provides real world evidence of discoveries made in the experimental literature: namely, that music
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instruction provides social and academic benefits to students with ADHD. The findings of the current study can be incorporated in all aspects of the education system, from policymaking at the ministry level, to in class application for teachers.

Future research that expands upon the findings of my current study were identified to provide further evidence of the beneficial aspects of music education for students with ADHD, as well as those with other disorders or special needs. It is my hope that the findings presented in my current study, together with the existing body of literature, will be utilized to further the understanding of ADHD and develop a more rigorous education model to support these students’ unique needs.
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Appendix A: Letter of Consent for Interview

Date: ___________________

Dear ___________________,

I am a graduate student at OISE, University of Toronto, and am currently enrolled as a Master of Teaching candidate. I am studying teachers’ use of music education and music based activities as responsive pedagogy and a means of intervention for students with ADHD. This research is being conducted for the purposes of investigating an educational topic as a major assignment for our program. I think that your knowledge and experience will provide insights into this topic.

I am writing a report on this study as a requirement of the Master of Teaching Program. My course instructor who is providing support for the process this year is Dr. Angela MacDonald. The purpose of this requirement is to allow us to become familiar with a variety of ways to do research. Your participation will involve a 45-60 minute interview...
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that will be audio-recorded. I would be grateful if you would allow me to interview you at a place and time convenient to you.

The contents of this interview will be used for my assignment, which will include a final paper, as well as informal presentations to my classmates and/or potentially at a conference or publication. I will not use your name or anything else that might identify you in my written work, oral presentations, or publications. This information remains confidential. The only people who will have access to my assignment work will be my research supervisor and my course instructor. You are free to change your mind at any time, and to withdraw even after you have consented to participate. You may decline to answer any specific questions. I will destroy the audio recording after the paper has been presented and/or published which may take up to five years after the data has been collected. There are no known risks or benefits to you for assisting in the project, and I will share with you a copy of my notes to ensure accuracy.

Please sign the attached form, if you agree to be interviewed. The second copy is for your records. Thank you very much for your help.

Sincerely,

Researcher name: Bradley Marks

Phone number: (416) 992-8076
Email: brad.marks@mail.utoronto.ca

Instructor’s Name: Dr. Angela MacDonald

Phone number: _________________

Email: angela.macdonald@utoronto.ca

Consent Form

I acknowledge that the topic of this interview has been explained to me and that any questions that I have asked have been answered to my satisfaction. I understand that I can withdraw at any time without penalty.

I have read the letter provided to me by Bradley Marks (name of researcher) and agree to participate in an interview for the purposes described. I agree to have the interview audio-recorded.

Signature: ______________________________________

Name (printed): _______________________________

Date: _____________________
Hi! My name is Bradley Marks and I would like to thank you for agreeing to participate in my research study. My research is investigating the potential use of music instruction as a means of intervention to assist students who are affected by Attention Deficit Hyperactivity Disorder, also known as ADHD. Specifically, the main research question that I am addressing is: Is music education a useful tool in the intervention of students with ADHD? Also, the subquestions that I hope to gain some insight into are: 1) How is music instruction implemented in the classroom? 2) What effects does music instruction have on the academic performance of students with ADHD? 3) How can music be applied in a cross-curricular manner to facilitate academic achievement for students with ADHD?

This interview will last approximately 45-60 minutes and consists of 21 questions. I will ask you questions pertaining to your background as an educator, your experience with students diagnosed with ADHD, your beliefs and values regarding music education in the school setting, and the challenges you face as well as the support systems in place to help you overcome these challenges. I want to remind you that you may choose to not answer any question which you do not feel comfortable with and that you have the right to end your participation at any time during the interview or afterwards with no repercussions. I
have explained the purpose of the study to you and you have received a copy of the interview questions, so before we begin I invite any questions that you might have.

**Background / Experience of the Participant:**

1. How long have you been working in education and what grade/age level do you currently teach? What other grades and subjects have you previously taught?
2. Can you tell me more about the school you currently teach in? (size, demographics, programming)
3. How long have you been teaching at this school?
4. Do you fulfill any other roles at the school in addition to being a classroom teacher? (e.g. coach, advisor, leader, support worker)
5. Can you tell me a bit more about your educational background, and what informed your decision to become a teacher?
6. As you know, I am interested in learning how educators are using music as responsive instruction for student with ADHD. First, can you tell me more about your interest in music education? How did you develop this interest / competency? (probe re: personal, professional, educational experiences).
7. Have you taken any formal music instruction yourself?
8. Is there anything you are also able to tell me about your commitment to supporting students with ADHD? What kinds of experiences contributed to developing this commitment in you?
9. In your experience, how common is it for you to work with students with ADHD?

**Beliefs and Values**
10. In your view, what is the value of music education? (what do you see music education having the potential to do?)

11. Where do you recognize opportunities for music education in the curriculum?

12. As an educator who integrates music education as responsive instruction for students with ADHD, can you tell me more about what you know about ADHD? In your experience, what are some of the challenges faced by students with ADHD?

13. In your view, what is the value and potential of music education for students with ADHD? Why do you believe it is important to integrate music education for students with ADHD?

Teaching Practices

14. In your classroom teaching practice, how do you integrate music education into your lessons? What instructional approaches and strategies do you use?

15. Are there any other subject areas in which music education could be integrated? How might music education be integrated in these subject areas?

16. Can you give me an example of a lesson that you have designed and taught that integrated music education?
   a. What were your learning goals in this lesson?
   b. What opportunities for learning did you create to meet those goals?
   c. What resources supported this lesson?
   d. How did your students with ADHD respond to this lesson? What outcomes did you observe from them?
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17. Can you describe what effects you notice, if any, on the academic performance of students with ADHD?

18. Can you describe how students with ADHD perform during a typical music lesson as compared to a non-musical lesson?

Supports, Challenges, and Next Steps

19. What range of factors and resources support your work integrating music education?

20. What challenges do you encounter with this work? How do you respond to these challenges? How might the education system further support you in meeting these challenges?

21. For those teachers, including beginning teachers, with little experience integrating music education, but who are committed to supporting students with ADHD, what advice do you have for them about how they can begin to create these opportunities for their students?

Thank you for your time and considered responses.