A Music Therapy drumming Intervention in Support of Children with Developmental Dyslexia

Grace-Ann Hunte

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By: Grace-Ann Hunte

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Signed by the final Examining Committee:

_Laurel Young_____ Chair
Laurel Young

_Calli Armstrong _____ Examiner
Calli Armstrong

_Laurel Young _____ Examiner
Laurel Young

_ Guylaine Vaillancourt _____Supervisor
Guylaine Vaillancourt

Approved by _Stephen Snow _____
Stephen Snow, Chair of the Department of Creative Arts Therapies

__2015_ YEAR _Catherine Wild _____
Catherine Wild, Dean of the Faculty of Fine Arts

ABSTRACT

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Grace-Ann Hunte

This study sought to create a 16-week music therapy program using drumming to address the psychosocial needs of high-functioning school aged children between the ages of 10-12 associated with developmental dyslexia. These needs included self-esteem, anxiety, and reading deficits. The program formulated through this research study encompasses a variety of rhythm-based interventions originating from West African musical practices and emphasizes a group-oriented model of participation. It also draws from the principles and approaches developed from music therapy practices for children with dyslexia, which emerged from the literature and interview data.

Results of this study suggest that drumming potentially addresses the learning needs of children with dyslexia because aspects such as rhythm, structure and sequencing are common components between drumming, music perception, and language (Lamb & Gregory, 1993). Results of this study also showed that drumming can potentially address the psychosocial needs of children with dyslexia as it promotes expression, as well as physical and emotional releases (Amir, 1999). Drumming in music therapy encourages social interaction, while also offering opportunities for children to establish and connect with themselves, gain internal awareness of self through organization, and build skills in hopes that these will transfer into their daily lives.

The results of this design serve the purpose of answering the established research question: "What is the structure of a music therapy program that uses drumming for children between the ages of 10-12 who have been diagnosed with dyslexia?" A functional music therapy program was created, providing concrete examples of techniques for music therapists to develop further knowledge of how music therapy can address the needs of children with developmental dyslexia. Once tested and refined, this program can be used in music therapy clinical practice and can be the basis for further research.

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"Just fly girl, I'm not clipping your wings, just soar into the heavenly" -June-Ann Hunte

Dedication

When I realized that music was a major source of my happiness, it was evident that I had to incorporate it into my future career. For me, the beauty of music is its diversity and ability to communicate emotion; and coming from an African-Canadian background, I can identify where music has been a source of inspiration and motivation and an avenue which evoked freedom of expression in the lives of African slaves. I can relate to their use of music as a form of escape from stress anxiety and pain. I dedicate this thesis to those who continue to experience stress, anxiety and pain due to their life challenges and differences. I also dedicate this thesis to those who are willing to stand and support these individuals fostering love, care, and unconditional acceptance.

"Do not sacrifice the future for the present, sacrifice the present for the future."

-Fredrick Kwasi Dunyo

Instructor of West African Drum Ensemble

York University

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Chapter 1. Introduction

For the past 5 years I have worked in a daycare setting with children with various special needs including difficulties with reading and symptoms of dyslexia. I often wondered what was it about the musical activities presented by their teachers during circle time that seemed to transform them and allow them to come out of their shells when approaching the same academic work but in a musical form. Here, I witnessed active and positive engagement, attributes that were opposite to the withdrawn, disconnected behavior I witnessed when they were engaging in academic work sitting at their tables.

Statistics from the International Dyslexia Association allow one to conclude that in a school of 300 students; at least 45 are likely to have some form of dyslexia (International Dyslexia Association, 2007). Individuals with dyslexia may experience psychosocial difficulties such as frustration, exhaustion, anxiety, and low self-esteem (Oglethorpe, 2001). High scores of social, emotional and behavioral difficulties can be correlated with self-esteem (Terras, Thompson, & Minnis, 2009). Self-esteem problems may arise in early childhood and by school age, some may experience struggles or failures in school which can often be distressing (McNulty, 2003). Therefore there is a strong need for emotional support and supportive relationships as these are said to be protective factors in the maintenance of a child's self-esteem (McNulty, 2003; Nalavany, Carawan, & Rennick, 2011; Terras et al. 2009).

Music educators have reported music as a viable intervention tool for developmental dyslexia despite the lack of music therapy research in addressing the needs of said population (Bryson, 2013). Evidently, connections between music and dyslexia have been drawn, yet relatively little has been done to study how music therapy may serve to assist the needs of people with dyslexia. Through my experience and exposure to Mande and Ghanaian drumming (musical practices largely originating from West Africa encompassing rhythmic striking on a percussion instrument), I have personally witnessed the power of the drum to decrease anxiety, and to promote relaxation. Similarly, during the fifth and sixth month of gestation, an unborn child can be soothed and relaxed by the drum of their mother's heartbeat. To an unborn child, the earth is a vibration of our mother's internal rhythms, her breathing and her heartbeat. According to Hernandaz (2001) it can be argued that mothers were the first performers of the drum, as their internal rhythms coincide with the baby's kicks while in the womb, a reason to conclude that

children are born with rhythm (Hernandaz, 2001). In addition, through drumming I often experienced the release of emotions and was conscious of my feelings of unity, and communal support. I also found a sense of escape which allowed me in return to find clarity of mind.

West African drumming, and more specifically Mande and Ghanaian musical practices have been chosen to form the foundation of the program's musical content because of the author's experiences with these practices. In addition, the literature notes that West African drumming is a form of non-verbal expressive communication that has a here-and-now focus (Friedman, 2000). It can therefore be used to substitute verbal expressive communication while emphasizing emotions occurring in the present moment. In contrast, West African drum patterns can assist in verbal expressive communication since it imitates the rhythms and the tonality of speech. Furthermore, West African drumming entails full body involvement, engaging children sensorily, bodily, emotionally and intellectually and has the potential to result in feelings of accomplishment and a sense of group identity (Longhofer, & Floersch, 1993) and provide positive socialization (Kalani, 2005). In addition the literature notes that drumming interventions within music therapy have been shown to decrease anxiety (Ho, Tsao, Block, & Zeitzer, 2011) increase self-confidence (Aigen, 1998; Nordoff & Robbins, 1977, 1985; Kalani, 2005) and allow for an emotional release (Amir, 1999; Friedman, 2000) attributes supportive of children with dyslexia. A music therapy drumming intervention incorporated within the school setting has yet to be established to support the needs of children with dyslexia as well as catering their emotional well-being. Moreover due to rhythm being fundamental in nature, drumming interventions are enjoyed by a variety of people with diverse cultural or ethnic backgrounds.

This program has been designed to be facilitated only by a music therapist. Drumming enhances sensory and bodily contact, which is linked to increased emotional awareness (Flores, 2011). As children come in contact with their bodily and sensory modalities, their emotions, thoughts and needs, a music therapist must be present to assist in dealing with possible heightened awareness of feelings. Skills of regulation need to be coached to help individuals become aware of, tolerate and make sense of their emotions (Greenberg, 2004). A music therapist must also provide healthy emotion regulation tools in the moment to decrease and work through any foreseeable anxiety. In addition, this program specifically works to address educational deficits that directly affect the health and well-being of a child with dyslexia. The techniques used by the music therapist will be drawn from music therapy models, and the interventions

outlined in this program were purposefully selected to address the emotional and social components to help a child work through their dyslexia. Furthermore, this program is not intended to supplement the current school curriculum, and acquiring knowledge and skill is not its primary goal.

In summary, I have a longstanding interest on the effect of music on early childhood cognition. It was my curiosity about the positive feelings I had when engaging in drumming, along with my previous work with the daycare children, and personal childhood struggle with anxiety while reading aloud in a classroom setting that lead me to want to research how the drum might be used to address the needs of children with dyslexia within a music therapy setting.

Statement of Purpose

This study sought to create a music therapy program using drumming to address psychosocial needs pertaining to self-esteem and anxiety as well as the reading deficits of high-functioning school aged children between the ages of 10-12 associated with developmental dyslexia. The literature shows a high prevalence of dyslexia (Raven, & Court, 2003; Roongpraiwan, Ruangdaraganon, Visudhiphan, Santikul , 2002) and psychosocial factors such as self-esteem and anxiety that can also influence the experiences of those with dyslexia (Ingesson, 2007; McNulty, 2003; Ogethorpe, 2001; Terras et al. 2009). The literature also notes the positive effects on the use of music and music education (Forgeard, Schlaug, Norton, Rosam, Lyengar, & Winner, 2008; Overy, 2001; 2003) and the benefits of music therapy interventions implemented to support children with dyslexia (Register, Darrow, & Standley, 2007; Register, 2001; Overy, 2003).

Relevance to the Field

Studies have supported the need for more music therapy research with relation to this population. Register (2001) notes that her study on the effects of an early intervention music curriculum on pre reading and writing was to send a message to music therapists to alert them that there is a need to develop a focused curriculum or therapeutic plan for this treatment group. Therefore, a comprehensive understanding of how music therapy can be used within a drumming intervention program is indicated.

Research Question

The primary research question for this study was: "What is the structure of a music therapy program that uses drumming for children between the ages of 10-12 who have been diagnosed with dyslexia?" The first subsidiary research question for this study was: "How does drumming address the learning needs of children with dyslexia?" and the second one, "How does drumming address the psychosocial needs of children with dyslexia?"

Delimitations

This study only focused on children who have been diagnosed with dyslexia and who are between the ages of 10 and12. Interviews were limited to four Music Therapists Accredited (MTAs) who have worked with this population and who responded to the research recruitment electronic mail distributed through the Canadian Association for Music Therapy (CAMT).

Assumptions and Biases

I had several assumptions that must be acknowledged. I assumed that using music with children with dyslexia would benefit them in terms of improved reading ability and emotional support. I assumed that if sound tapping can be implemented into an approach to aid children with dyslexia (Wilson, 2008; Ritchey, 2006), there is room to believe that a music therapy based approach with the use of drumming can also be used with this population. Lastly, my past experience engaging in learning activities with the use of music with children with reading disabilities have led me to strongly believe in the positive effect music has on this population.

Chapters Summary

The chapter following the introduction reviews relevant literature related to vital components of a music therapy drumming program for the targeted population. Chapter Three outlines the methodology of intervention design research as well as the data collection and analysis procedures. Chapter Four presents the results of this research, including data analysis and a detailed intervention protocol. The final chapter discusses and interprets the findings, and explores future implications of the research.

Chapter 2. Literature Review

This literature review examines the epidemiology and prevalence of dyslexia, psychosocial impacts of dyslexia: self-esteem and anxiety, children's need for supportive relationships, characteristics of individuals with dyslexia, and existing literature on the use of music, music therapy, and drumming with this population.

Epidemiology and Prevalence

Developmental dyslexia is associated with a learning disability characterized by difficulty with reading, writing, and spelling independent of adequate education, level of intelligence, and sensory and neurological deficits (Demonet, Taylor, & Chaix, 2004; Lyon, Shaywitz, & Shaywitz, B., 2003; Muneaux, Ziegler, Truc, Thomson, & Goswami, 2004).

In an effort to better understand the measure of the proportion of a population affected by dyslexia, Roongpraiwan et al. (2012) conducted a study to determine the prevalence of dyslexia in first to sixth grade students at Wat Samiannaree School in Thailand. To test their intellectual functioning, the 486 participants were given the Raven's progressive matrices test (Raven et al., 2003). The student's reading ability was evaluated by teachers, researchers, and special educators. Students were therefore diagnosed with dyslexia if they were found to have impairment in phonology and if their reading ability was at least two-grade levels below their actual grade level. Roongpraiwan et al. (2012) found that the overall prevalence of dyslexia was estimated to be 5–10%. Roongpraiwan et al. (2012)'s study gives an estimate of the prevalence of dyslexia in a given population; however, the authors note that in order to determine the prevalence of dyslexia in the general population, further studies examining a larger population and different socioeconomic statuses are required. With regards to gender, Roongpraiwan et al. (2012) found that from country to country the ratio of boys to girls varied; however, dyslexia had a higher prevalence in boys. Statistics from The International Dyslexia Association (International Dyslexia Association, 2007) show that dyslexia affects males and females nearly equally, as well as people from different ethnic and socioeconomic backgrounds. Statistics from this association also show that 15-20% of the world's population has dyslexia related symptoms, with cases ranging from mild to severe.

Overall, the general consensus of percentage of children affected by dyslexia documented in the literature range between 5-20 % in any given population (International Dyslexia Association, 2007; Roongpraiwan et al., 2012; Shaywitz, 1998; Torgesen; 2000). It is widely accepted that dyslexia can pose an issue with achievement in an academic setting for school-aged children. Shaywitz (1998) states that even with explicit instruction, 5% to 17.5% of schoolchildren do not become fluent readers. Out of this population, Torgesen (2000) reports that despite concentrated academic instruction, 2 to 6% of these children make minimal progress and many fail to catch-up successfully to age-appropriate levels. It is a disability that remains with individuals throughout their lives (Katusic, Colligan, Barbaresi, Schaid, & Jacobsen, 2001; McCandiss & Noble, 2003; Shaywitz et al.,1990).

Psychosocial Impacts of Dyslexia: Self-esteem and Anxiety

Developmental dyslexia has an effect on psychosocial well-being more specifically pertaining to high levels of anxiety and low self-esteem (Terras et al. 2009). Among many of the cognitive factors that influence the experience of individuals with dyslexia, psychosocial difficulties such as frustration, exhaustion, anxiety and low self-esteem are important (Oglethorpe, 2001). Studies have suggested that children with dyslexia are not at elevated risk for behaviors related to anxiety (Miller, Hynd, & Miller, 2005). Despite these suggestions, and while one cannot conclude that all individuals with dyslexia experience the aforementioned challenges, Bryson (2013) concludes that most have dealt with at least several of them (Bryson, 2013).

Self-esteem. Self-esteem is an anxiety-related symptom said to be an important component of psychosocial adjustment and emotional well-being (Alexander-Passe, 2006). Characteristics of individuals with dyslexia have reported to include anxiety, low self-esteem and a pervasive feeling of being overwhelmed with coping with dyslexia (Arkowitz, 2000). Low self-esteem and anxiety are strongly related as some theories claim that self-esteem serves as a defense against anxiety (Crocker & Park, 2004). In contrast the opposite casual direction is also plausible as experiences of anxiety might have an effect on self-esteem.

Coopersmith (1967) describes self-esteem as a personal judgment of worthiness that is expressed in the attitudes the individual holds toward himself. Accordingly it is noted that positive attitudes towards oneself has shown to enable a child to have positive attitudes concerning their disability.

Several studies have suggested a strong association between children with dyslexia and difficulties with low self-esteem (Alexander-Passe, 2006; Humphrey, 2002; Ingesson, 2007; McNulty, 2003; Nalavany et al. 2011; Terras et. al., 2009). As indicated by Alexander-Passe (2006), self-esteem is an important component of psychosocial adjustment and emotional well-being. Self-concept as described by Shavelson, Hubner, & Stanton (1976) can be defined as a person's perception of himself or herself. This organized collection of beliefs and self-perceptions can be formulated through interactions with the environment and influences of others. Self-concept and self-esteem have therefore been shown as important contributing factors influencing motivation, academic achievement, and peer relations. Consequently, these factors play a role in how a child experiences and perceives their disability. Using a control group, Feldman et al. (1993) concluded that low self-esteem, negative self-image, anxiety, and depression were issues more likely to be reported by individuals with dyslexia. Similarly, issues of low self-esteem have been documented in literature about children and adults with dyslexia (Alexander-Passe, 2006; Carroll & Iles, 2006). In a study by Alexander-Passe (2006), three standardized tests for self-esteem, coping, and depression were used to examine how teenage individuals cope with dyslexia and whether or not it had an effect on their self-esteem and depression. Results suggested gender differences as female students reported low general and academic self-esteem, frequent use of emotional and avoidance-based coping, and moderate levels of depression. In contrast, male self-esteem was comparable to the norm; they tended to use task-based coping strategies and showed minimal depression. The results of this study suggest that individuals with dyslexia who have a high self-esteem display more confidence and expect to succeed. In addition, it is noted that they are more successful in both academic and social environments. This also suggests that successful students with dyslexia may have a higher self-esteem than their peers.

Humphrey (2002) conducted a study to investigate teacher and pupil ratings of self-esteem in children with dyslexia. He found that children who experience problems in learning develop what is called maladaptive self-referential which is that a child continuously refers to themselves in a negative way (Humphrey, 2002). Maladaptive self-referential is also noted in Ingesson's (2007) study which found that the commonality between Swedish teenagers and young adults diagnosed with dyslexia was that they felt distressed when it came to grades in school. This was a factor that attributed to low academic self-esteem. Ingesson, (2007) also found

that encouragement and early diagnoses of children with dyslexia may enable them to view themselves more positively.

Anxiety. Much of the literature identifies anxiety as a significant psychosocial issue among children and adolescents with dyslexia (Carroll et al., 2006; Carroll, Maughan, Goodman, & Meltzer, 2005; Tsovili, 2004). Individuals with literacy difficulties and more specifically dyslexia may be highly vulnerable to emotional consequences and show higher levels of anxiety than their typically functioning peers. For instance in a 2005 study, a greater prevalence in children with dyslexia that had a co-morbid anxiety disorder (9.9%) than those without literacy difficulties (3.9%) was found (Carroll et. al.,2005). In a more recent study Carroll et al., (2006) found compared to the controlled group with no history of learning difficulties, students with dyslexia showed higher levels of anxiety including academic and social anxiety.

Research has shown children with learning disabilities were more anxious than their non-learning disabled peers (Tsovili, 2004; Carroll et. al., 2005; Riddick, Sterling, Farmer, & Morgan, 1999; Carroll et. al. 2006). Willcutt and Pennington (2000) examined twins with dyslexia in relation to their stated psychiatric difficulties. The study found that anxiety was associated with the twins' reading difficulties. The results of the study suggest that rather than being caused by genetic and environmental influences common to the twins, increased anxiety occur as a consequence of literacy difficulties.

Tsovili (2004) found that adolescents with dyslexia reported higher levels of anxiety compared to adolescents without dyslexia. Tsovili (2004) compared anxiety levels of 68 adolescents with dyslexia and 68 adolescents without dyslexia using the Greek adaptation of the Spielberger's State-Trait Anxiety Inventory for Children (Spielberger, Edwards, Lushene, Montuori, & Platzek, 1973). Interviews were then conducted with the adolescents with dyslexia who showed the highest and lowest reading anxiety. The findings suggest that adolescents with dyslexia experience reading as a threatening and stressful experience and these feelings are exacerbated by the inconsistencies of dyslexia. In addition, (Riddick et al., 1999) used the Spielberger Anxiety Inventory with university students who had and who did not have dyslexia. 25% of the students who had dyslexia scored in the high or very high category for anxiety as opposed to 6% in the control group.

Studies have shown that children with learning disabilities show issues of anxiety into adulthood, if not addressed in the early stages. Therefore support for children with dyslexia at a young age is crucial as these psychosocial issues may progress into adulthood.

Children's Need for Supportive Relationships

The literature shows the importance of parental emotional support and supportive relationships for children with dyslexia. These include good relationships with family, peers, and teachers as these are associated with high levels of esteem and serve as protective factors in the maintenance of a child's self-esteem (Terras et al. 2009; McNulty, 2003; Nalavany et al. 2011). In addition, positive attitudes towards reading difficulties from a good support group have been collectively defined through the shared experiences among this group as meaningful (Nalavany et al. 2011). Nalavany et al. (2011) used concept mapping to help describe and gain a better understanding of the psychosocial experiences of adults diagnosed with dyslexia and found nine common themes that arose during the study, one of which being "a good support system makes the difference" (p.72). The participants collectively agreed that among the shared experience, it was beneficial to have a good support system.

McNulty, (2003) conducted a systemic study that examined the emotional experiences of adults who were diagnosed with dyslexia as children. Through analysis of the collective stories, McNulty, (2003) concluded that lifelong struggles were related to sense of insecurity individuals with dyslexia experienced. To enhance personal growth, quality of life, and to promote functional and psychological compensation in adulthood, individuals required a positive support group. In addition, Terras et al. (2009) found that children were less likely to perceive a negative impact on social relationships if they had high self-worth and if they and their parents had more positive attitudes towards their reading difficulties.

Inevitably, social encounters and more specifically encounters with peers can have a positive or negative effect on an individual. The literature outlines the benefits of increased self-esteem and emotional support in children with dyslexia. Those with high self-esteem display more confidence, they expect to succeed, and they are more successful in both academic and social environments (Alexander-Passe, 2006). Given the above statistics and psychosocial factors that influence their experience, it is crucial to implement evidence based interventions to support

the needs of children with dyslexia, specifically to decrease levels of anxiety and increase self-esteem.

Characteristics of Individuals with Dyslexia

A large body of research has demonstrated that individuals with dyslexia have a number of associated problem areas including deficits in visual and auditory processing (Thompson & Goswami, 2008; Shaul, 2012), aspects of phonological processing (Anvari, Trainor, Woodside, & Levy, 2002; Goswami, Thompson, Richardson, Stainthorp, Hughes, Rosen, 2002; McArthur, Ellis, Atkinson, & Coltheart, 2008; Stanovich, 1998; Witton, Talcott, Hansen, Richardson, Griffiths, Rees, 1998), rhyme and alliteration (Jeffries, & Everatt, 2004), difficulties with prosodic rhythm, maintaining a steady beat (Oglethorpe, 2001); rhythm perception and beat perception (Goswami, Gerson, Astruc, Huss, & Mead, 2012).

Visual processing. In an effort to examine possible differences in processing between typical readers and those with dyslexia, Shaul (2012) conducted a study which administered a lexical decision task in different visual field presentations in typical readers and readers with dyslexia. Participants were asked to decide whether or not a sequence of letters were relevant existing words in spoken language, in that case the stimulus was considered an inaccurate word. Electro-physiological and behavior measures were used to examine the brain activity during the process and to provide information on accuracy and reaction time. Shaul (2012) found that for the electro-physical measures, cognitive processing appeared slower in people with dyslexia as compared to the control group of typical readers while performing this task. For the behavioral measures, Shaul (2012) found that the participants with dyslexia read slower and read with more errors than the typical readers. Despite these findings, performance in participants with dyslexia improved and even matched those participants who were typical readers when the stimuli were presented to them in the left visual field. Shaul (2012) suggests that for linguistic processing, the participants with dyslexia were perhaps more reliant on their right hemisphere. In contrast, for linguistic processing the participants classified as typical readers were reliant on their left hemisphere. Interestingly enough, music although traditionally associated with the right hemisphere of the brain, rhythmic perception has been found to be processed more predominately in the left hemisphere (Platel, Price, Baron, Wise, Lambert, Frackowiak, & Eustache, 1997). Furthermore, while engaging in West African drumming, there is active integration of both the

left and right side of the brain (Lespier, 2012). This provides support that although individuals with dyslexia may be more reliant on their right hemisphere, drumming may assist with activation of both sides of the brain.

Auditory and phonological processing. Inability to perceive consonant sounds, difficulties in auditory discrimination, sequencing, segmentation and blending have been among the most common auditory processing difficulties highlighted in the literature (Lamb & Gregory, 1993). According to Goswami (1990), children with dyslexia have more difficulties in counting the number of syllables in words and deciding that two words begin with the same sound element. These are phonemes and much research has demonstrated that phonemic awareness correlates strongly with reading acquisition (Bruck & Treiman, 1990; Stahl & Murray, 1994). Auditory perception has been investigated extensively in relation to the phonological deficit in dyslexia, it has been found that poor auditory perceptual skills is likely to contribute to poor phonological processing and impaired literacy (Goswami et al., 2002; McArthur, et. al., 2008; Witton et al., 1998).

Correlations between children's ability to read and their ability to discriminate pitches accurately have been drawn through preliminary studies (Fisher & McDonald, 2001; Hansen & Bernstorf, 2002; Ziegler, Pech-Georgel, George, & Foxton, 2012). In addition, studies have found correlations between phonological awareness and reading development of 4 and 5-year-old children (Anvari et al., 2002). Ziegler et al. (2012) conducted a study that investigated global versus local pitch pattern perception in children with dyslexia. Participant's ages ranged between 8 and 11 years. While performing repetitive tasks, different and the same, participants were required to listen to two consecutive 4-tone pitch sequences. In comparison to children who were identified as typical readers and who were typically developing, children with dyslexia showed high pitch perception deficits in the local condition and not the global condition. Due to local pitch changes being processed by the left hemisphere, Ziegler et al. (2012) found consistencies with left-hemisphere deficit in dyslexia. However global pitch changes are processed by the right hemisphere. The study suggests a connection between impaired pitch processing and abnormal phonological development in children with dyslexia, which makes pitch pattern processing an important tool for early diagnosis and remediation of dyslexia (Ziegler et al, 2012).

Huss et al. (2013) investigated the hypothesis that the accurate perception of musical metrical structure is related to basic auditory perception of rise time, and also to phonological and

literacy development in children (Huss et. al. 2013). Sixty-four typically developing children and children diagnosed with dyslexia underwent behavioral tasks that explored relationships between musical metrical perceptions, auditory perception of amplitude envelope structure, and phonological awareness. Huss et al. (2013) found that musical metrical sensitivity predicts phonological awareness and reading development and that the accurate perception of metrical structure may be critical for phonological development and consequently for the development of literacy (Huss et al. 2013).

Rhythmic abilities. Studies have shown correlations between rhythmic ability and reading ability (Douglas & Willatts, 1994 ; Port, 2003). Conversely, research has demonstrated that children with dyslexia or reading based disorders are impaired in rhythm perception (Overy, 2003). Furthermore, research has suggested that children who show increasing ability in melodic and rhythmic perception tasks will obtain higher results in phonological awareness and pre-reading tests. This is due to music and language processing requiring similar cognitive skills (Bolduc & Montésinos-Gelet, 2005; Lam & Gregory, 1993).

Music and Dyslexia

Music is classified as a multi-sensory modality, and it is recognized that multi-sensory training is valuable for children with dyslexia (Bloom, 2006). This multi-sensory stimulation in turn allows the child to gain greater access to and integration of his or her sensory perceptions (Bloom, 2006). Research has shown that enhanced academic achievement in reading can be attributed to music education, music perception, and overall music participation (Overy, 2001; Overy, 2003; Standley & Hughes, 1997) as specific music experiences have been shown to teach essential learning components. Overy's (2001; 2003) two experimental studies indicated that musical training can improve some of the language skills in children with dyslexia. Overy (2001) found that vocal based music lessons helped to increase the scores on the phonologic and spelling tasks in six-year-old children with both mild and strong risks for dyslexia. Overy (2003) found that music instruction also helped the children with rhythm copying, rapid auditory processing, phonological skills, and spelling, however there were no significant gains in reading. Therefore these studies suggest that further intensive musical training over a period of time that focuses specifically on auditory processing and phonological skills may result in increased gains in reading ability. In addition, Forgeard et al. (2008) examined the relationship between musical

discrimination abilities and phonological skills in typically reading children and hypothesized that the children who received music training would show an improvement in musical discrimination and phonological skills in relation to the children who did not receive the training. As a result, Forgeard et al. (2008) found that there was a relationship between phonological skills and pitch processing in typically reading children, and that this relationship is stronger in children receiving instrumental lessons (Forgeard et al., 2008).

Music Therapy and Dyslexia

The relationship between music and dyslexia has been addressed several times in the literature however the literature shows little content with relation to music therapy and dyslexia. There is research however that shows that music therapy interventions can be used to assist in the enhancement of reading skills and literacy of children (Register et al., 2007; Register, 2001; Overy, 2003). The literature supports that music is interactive and engaging and can be a factor that heightens the attention in children with dyslexia (Register et al., 2007). Therefore musical interventions have been shown to be a support in the enhancement of reading skills (Darrow et al. 2007; Overy, 2003). Activities presented to children with reading disabilities in the form of music and reading indicated that the area of reading comprehension improved (Register et al., 2007). These activities included the three reading skills: word decoding, word knowledge, and reading comprehension paired with one possible music aspect of the lesson, such as listening, instrument playing, singing, and movement (Register et al., 2007).

The use of drums in music therapy. The use of drumming as an intervention has been heavily supported in music therapy with children and adults with various abilities (Aigen, 1998; Amir, 1999; Edgerton, 1994; Kaser, 1991; Nordoff & Robbins, 1977, 1985; Watson, 2002).

Emotional release. Drum circle techniques have been used in working with children who experienced emotional and behavioral difficulties. The existing literature supports that one can experience physical and emotional releases through cathartic playing (Friedman, 2000). Through the use of the drums the child can experience a sense of relief through the release of energy (Amir, 1999). Due to this physical and emotional release that can be experienced, the techniques drawn from drumming can also be used along with other types of therapy approaches to increase the social and emotional development of children. However, it must be made clear that healthy expression and emotional releases experienced through the use of drumming in therapy does not

involve the venting of emotion without therapeutic processing (Greenberg, 2004). The release and expression of emotion is not the result of constricting emotions, rather it involves expressing strongly experienced emotion, within a therapeutic environment (Greenberg, 2004). Most importantly, the therapeutic environment facilitates therapeutic processing of the emotions.

Decreased anxiety. After a 12-week period of a drumming intervention paired with counseling activities (Ho et al., 2010), it was found that children demonstrated decreased feelings of anxiety and withdrawal. In addition, the children reported an increase in ability to cope with difficult school situations and a decrease in stress. These results suggest that a musical intervention such as drumming paired with counseling has the ability to address psychosocial issues.

Self-confidence. The experience of industry, mastery and competence (vs. lack of industry and feelings of failure and inferiority) are central to a child's healthy development in Erick Erikson's theory of psychosocial development. In light of this theory it is notable to suggest the playing of complex rhythmic patterns may allow a child without previous musical qualifications to experience success and high levels of self-confidence (Aigen, 1998; Nordoff & Robbins, 1977, 1985). This increase in self-confidence may also encourage their belief in their own self-efficacy to grow through a creative and interactive intervention, which promotes vicarious and enactive learning (O'Donnell, 2011; Ho et al., 2010). Oaklander (2006) supports the importance of a child having experienced mastery and emphasizes that a child cannot achieve satisfactory sense of self without having had adequate experience of mastery. Furthermore, a sense of mastery can often lead to the experience of success. More specifically, "Guided interactive drumming" as described by Kalani (2011) is a type of drumming experience oriented towards creating feelings of success through unified rhythms and call & response interactions (Kalani, 2011). Moreover, drumming has not only been found to increase self-esteem and provide opportunities for mastery and success, but to also forge feelings of openness, intimacy, and connectedness among participants (Bensimon, Amir, & Wolf, 2008).

The use of drums with children who have dyslexia. Although the use of drumming in music therapy has received considerable attention, little research was found on the implementation of a music therapy drumming intervention for children with dyslexia which indicates a need to develop a focused curriculum or therapeutic plan for this treatment group. The

literature however, notes the general significant positive effect on the implementation of therapeutic drumming (Amir, 1999; Bittman et al., 2004; Camilleri, 2002; Kaplan, 2000). One reason for implementation outlined in the literature is that rhythm is a natural human function (Bittman et al., 2001, 2009; Camilleri, 2002). Another reason for implementation in therapeutic drumming is that it enhances communication (Bittman et al., 2009; Kaplan, 2000) and reduces stress and tension (Bittman et al., 2009; Quinn, 2002; Strong, 2000). Drumming also facilitates bodily effects as the individual engaging in drumming can feel the sound vibrations in their body which in turn can increase self-awareness of body sensations. In addition, the experience may cause an emotional release (Gardner, 1997) such as anger (Amir, 1999) for example. According to Amir (1999), anger and rage are the most prevalent emotions associated with drumming in music therapy. The release of energy and a sense of relief (Amir, 1999) can be experienced by individuals through playing fortissimo. In a study presenting music therapy group work with soldiers diagnosed with post-traumatic stress disorder, participants reported that drumming loudly in fortissimo during group improvisations also allowed them a sense of relief and an outlet for rage as well as a sense of satisfaction and empowerment (Bensimon et al., 2008). Lastly drumming aids short-term and long-term memory, concentration and other mental processes (Kaplan, 2000; Quinn, 2002; Strong, 2000). Drumming aids memory and concentration due to the fact that one must focus and remember which beats go where as well as the sequence of beats. When learning structured rhythms, visual and auditory memory skills are at work. These factors are important in support of the reading abilities in children with dyslexia.

The literature shows the use of "sound tapping" with children diagnosed with dyslexia. Tapping out sounds on one's fingers to assist in the recognition of phonemes was derived from the Wilson Reading System (Wilson, 2008) and the Orton-Gillingham Approach (Ritchey, 2006) to reading instruction. These multi-sensory, phonics-based approaches were developed for individuals specifically with reading disabilities and dyslexia. Tapping percussive instruments such as cymbals, sand blocks, drums, and rhythm sticks can also be used to segment the units of sounds in sentences and words (Pullen, 2003). Although there is a limited amount of literature specifically in the use of drumming and individuals with dyslexia, it is noted that sound tapping and rhythmic training could be effective in improving literacy for persons with dyslexia. Sound tapping and rhythmic training are likely effective due to the phonological deficit associated with dyslexia which has been linked to auditory processing difficulties with prosodic rhythm and

musical beat perception (Matthews, 2013). Accordingly, a rhythm-based music therapy approach with the use of drumming could also be effective in the improvement of the reading ability of children with dyslexia.

Summary of the Literature

Overall, the literature shows a high prevalence of dyslexia in children and that psychosocial factors such as self-esteem and anxiety can influence the experiences of those with dyslexia (Alexander-Passe, 2006; Carroll et al., 2006; Feldman et al., 1993; Humphrey, 2002; Ingesson, 2007; McNulty, 2003; Miller et al., 2005; Nalavany et al. 2011; Riddick et al., 1999; Terras et al., 2009 Tsovili ,2004). The literature also notes the supportive benefits of music therapy, as well as the positive effects that music perception, music participation and music education have on said population (Bloom, 2006; Forgeard et al., 2008; Overy, 2001; Overy, 2003; Register, et, al., 2007; Register, 2001; Standley & Hughes, 1997).

Research shows that music therapy sessions designed with specific academic measures are more effective than sessions that provide general music activities (Register, 2001). In addition, studies have found that musical interventions paired with counselling addresses areas of need in the psychosocial domain. Therefore a music therapy drumming intervention that aims to address the psychosocial needs of children with dyslexia can be beneficial. Additionally, it will foster a positive support system while targeting specific academic reading goals.

Chapter 3. Methodology

Intervention Design

The methodology used for this research is a qualitative intervention design because of its congruency with the established research question. Intervention design is the "systematic study of purposive change strategies, characterized by the design and development of interventions" (Fraser & Galinsky, 2010, p. 459). This research study blends research and theory with other knowledge to create intervention principles and action strategies as recommended by Fraser and Galinsky (2010). Action strategies include providing responsive feedback and support, and engaging in relatively structured activities detailed in a manual or protocol. In establishing this manual or program, risk factors are targeted by change strategies to produce positive results. Fraser and Galinsky (2010) also propose several steps within intervention research but in order to delimit the scope of this thesis, the current study only addresses the first two steps. The first step is *to develop problem and program theories* which requires the identification and definition of the problem and the development of program theories to address the problem. This step also not only requires the identification of malleable mediators and action strategies accumulated and found through review of the literature, but also that the action strategies address the malleable mediators. The second step is to *specify program structures and process*, which entails the development of an initial draft and submission of a music therapy program proposal for review by experts.

Data Collection

The data were collected from sources outlined in the literature review and from coded transcripts of audio recorded participant interviews. The data collection process was as follows: First, relevant music therapy literature was located through database searches that included PsychInfo, ERIC: Education, Medline, PubMed, ProQuest, Google Scholar. The researcher also conducted searches of music therapy journals such as the Canadian Journal of Music Therapy Journal, Nordic Journal of Music Therapy, Music Therapy Perspectives, Journal of Music Therapy. Second, a 30 to 60 minute interview was conducted over the telephone. The interview covered questions pertaining to music therapy and children with dyslexia, the use of drums, and questions pertaining to specific music therapy interventions tailored for said population (See Appendix C for interview questions). A non-directive style of interviewing was used to allow the

participants the freedom to control pacing and subject matter of the interview. Third, audio recordings of the four interviews were transcribed and analyzed for themes pertaining to the research questions.

Participants

Once ethical approval for this study was received from Concordia University's Human Research Ethics Committee (UHREC), participants were recruited through the Canadian Association for Music Therapy (CAMT). The recruitment notice was sent to all CAMT members via electronic message (See Appendix A for participant recruitment notice). Participants were chosen on a base of first contact, first included, and were purposefully selected because of their expertise in working with children with reading disabilities and dyslexia. Participants were required to sign a form giving their consent to participate in the study prior to the interview (See Appendix B for consent form). Participants included four music therapists accredited and out of the four, one worked closely with children diagnosed with learning disabilities who had issues in reading, but not specifically diagnosed with dyslexia. The remaining three however, worked specifically with children diagnosed with dyslexia.

Participants were sent a copy of the interview questions prior to the interview to allow them time to reflect upon the questions, think of detailed answers, and clarify their answers in the interview. During the interviews, participants were asked direct questions about their experience, music therapy-related interventions, and their overall work with this population.

Data Analysis

The data collected from the literature and the four interviews were analyzed and interpreted through the use of qualitative analysis coding methods: open, axial and selective coding (Neuman, 2006). In preparation for analysis, the data obtained from the literature was organized into broad categories: Epidemiology and prevalence; psychosocial influences on dyslexia; children's need for supportive relationships; unique differences in individuals with dyslexia; music and dyslexia; music therapy and dyslexia; the use of drums in music therapy and the use of drums and dyslexia.

The data obtained from the recorded interviews were transcribed verbatim. Open coding was employed to identify significant statements, phrases, and initial themes pertaining to the research topic. Axial coding was then used to formulate meanings from the significant statements and initial themes by grouping them into broader themes and categories. Lastly selective coding was used to identify and further organize particular sections of data that outline the themes of the coding process (Neuman, 2006).

Overall existing theories and participants' interview data, were evaluated and incorporated. As a result this intervention utilized the obtained data to design intervention principles and action strategies to enhance strategies used within a school setting with children diagnosed with dyslexia.

Step one: Development of problem and program theories. From the data obtained from the literature and the analysis of interview transcripts, the problem and program theories were identified. The program theories were further refined through open and axial coding which helped to determine the risks, protective and promotive factors associated with children with dyslexia. Malleable mediators that address social support and self-esteem of this population were identified and paired with action strategies developed through a review of current dyslexia focused school programs, application of coded data, and the author's experience.

Step two: Program procedures and processes. The data generated in step one was utilized to formulate session plans, interventions, goals and essential content for each session of the proposed program.

Ethical Issues

This research involved professional individuals who have worked directly with children with dyslexia and did not directly involve participants with dyslexia therefore it entailed minimal risk. The author respected the privacy of the individuals being discussed and ensured that the identifying factors of the statements made by participants be kept confidential. The author also allowed participants to recant their statements in the unlikely event, participants made a statement that they felt uncomfortable being documented. Strict confidentiality was maintained throughout the research project. No one, with the exception of the author, and supervisor was allowed access to any of the original research data obtained from the research study. Furthermore, the researcher

closely followed and adhered to the guidelines outlined in the Tri-Council Policy Statement and in the Code of Ethics of the Canadian Association for Music Therapy (CAMT).

Chapter 4. Results

Interview Data

Five major themes emerged from the interviews: length of program, network of social support/relationships, self-esteem, interventions, and supportive approaches.

Length of program. Collectively participants noted that the time frame of the proposed program was determined by multiple factors relating to specific needs of each individual, any previous specialized help, the level of need, school and parental support, and affinity for music. The proposed program length ranged from a twelve week minimum to twelve month minimum; one participant, recommending up to thirty-six months. Overall the number of sessions and length of program can be determined however, at the outset which can later be extended, if necessary.

Network of social support/relationships. This theme was comprised of seven sub-categories: why support? how to support? personal support, negative effect on social encounters (mainly peers), positive peer support: being witnessed/need for group session, and parental support.

Why support? Participants reported dyslexia as an invisible disability, and due to the similar appearance of a typical reader, children with dyslexia can often be overlooked and forgotten. In contrast, children with dyslexia can be scrutinized and expected to perform at the level of their counterparts.

How to support? (roles of the music therapist). Participants proposed that music therapists first should set up their programs for success by creating interventions that emphasize errorless learning, or demands objectives that can be easily attainable. In addition, one participant stated that music therapists can ensure success in performance by first knowing the child's limits, not dwelling on failure and using familiarity as a foundation to build new skills. Secondly, participants noted the importance of a competent therapist who demonstrates the ability to make spontaneous decisions and adjustments to the way the intervention is being administered to best suit the needs of each individual. Furthermore, while competence and experience with this population is vital in promoting the best client-centered care, one participant noted that music therapists must formulate a personal connection with the music being presented in the program.

"Contagious passion" as they described it, from therapist to client can be attainable when music therapists are passionate about the music being presented, and thus can address it (the program) creatively. Evidently creativity is ubiquitous in most forms of music therapy, especially with the use of improvisation and can be easily obtained from both music therapist and client.

Personal support. Participants stated that a lack of personal self- affirmation and self-support was prominent among the children they worked with. They found that as the children progressed in age they became more aware of the difference between themselves and their peers and often compared themselves with them. Therefore a strong need for positive reassurance was present.

Negative effect on social encounters (mainly peers). Participants noted the importance of addressing negative peer relations immediately, as it was important in helping to build a strong peer social support group, while focusing on participation and inclusion. Participants noted that negative peer relations are due in part by the feelings of inadequacy and need to exert powers over others in order to feel better about oneself. Some encounters with peers pose a threat to the development of self-esteem as individuals with growing awareness of their differences begin to compare themselves with others. One participant noted that individuals are aware of this difference at a young age as they are often labeled and identified as different. They continue to observe the successes of others and the positive attention given to successful individuals by teachers and other adult figures.

Positive peer support: being witnessed/need for group session. As previously indicated, positive peer support is key in the factors that can influence self-esteem, which gives reason why a group-oriented model of participation should be presented in this program. Participants noted the importance of the simple presence of peers in a positive learning space as good support for children with dyslexia. Participants also claimed that expressing oneself, achieving goals and building confidence in the presence of peers can be very beneficial for the children. Some of these benefits include: one takes a chance and accepts that that chance comes with vulnerability, one dares to express oneself, and one has the attention of one's peers. Participants claimed that it also enables particular kinds of empathetic relationships between group members, redirects one's thoughts on comparisons between one's success and others, and enables one to be an audience to oneself, looking inwardly and further creating an awareness of the self.

Parental support. Because positive attitudes towards reading difficulties from a good support group have been collectively defined as meaningful for the dyslexic population (Nalavany et al. 2011), one participant noted the importance of creating programs where support can be continued at home. The participant stated that music therapists must be cognizant of creating some interventions that can be replicated at home so that success can be continual throughout the therapeutic space, and at home.

Self-esteem. Anxiety-related symptoms such as lack of concentration, lack of attention, distraction, fear of rejection and failure, frustration, insecurity, withdrawal, lack of self-worth, and lack of self-encouragement, were among the many issues experienced by this population stated by the participants. Self-esteem however, was an attribute brought up by all four participants and was either considered to be a priority goal area or a secondary goal area. This theme was therefore sub-divided into two categories: self-esteem: priority and self-esteem: secondary.

Self-esteem: priority. One participant noted the importance of focusing on self-esteem because children with various learning disabilities are prone to bullying and is not limited to typically functioning bullies. Some bullies with learning disabilities tend to feel inadequate and find strength in exerting power over those who are of a lower functioning group. Another participant noted that self-esteem must be addressed as children may be underestimated by those who are typically functioning and therefore treated differently. Strong self-esteem will help combat negative feelings about the self when faced with these issues.

Self-esteem: secondary. One participant stated that building on confidence before focusing on self-esteem was important. In addition, another believed that confidence and mastery of a particular skill, task or ability should be the main focus in therapy over self-esteem. It was important for this participant not to create a false sense of abilities in a child. “Self-esteem will come hopefully out of a greater sense of confidence and mastery”. In addition to mastery, participants noted that once a goal is achieved, the complexity level must increase, so that there is constant elevation of skill sets**.** Furthermore participants noted that group drumming may effectively encourage children’s sense of mastery as it increases in complexity and through entrainment individuals can be swayed into playing along with the group.

Interventions. This theme is sub-divided into two categories: drumming Interventions, and other assisting Interventions.

Drumming intervention. The following lists various music therapy interventions specifically relating to drumming and rhythm that came up among participants and have been discussed in the previous chapters.

a) Internalizing rhythm and gaining internal organization through body percussions, call and response turn-taking, rhythmic imitation, and free improvisation.
b) Focusing attention and concentration via using an ostinato pattern during reading exercises, pairing beat with focused academic concept, and pairing a steady beat for readers to keep momentum and fluency.
c) Building speed and syllable awareness by breaking down phonemes and words into rhythms.
d) Using rhythms from familiar songs to build a foundation, and in contrast using foreign instruments and complex rhythmic patterns and techniques from a number of ethnic traditions from around the world.
e) Lastly, usage of the tactile and kinesthetic element, such as forming letters on the drum.

***Other assisting interventions*.** The following lists various music therapy interventions other than drumming that came up among participants:

a) Building confidence through vocal imitation, vocal turn-taking, vocal improvisations and improvising different sounds.
b) Learning auditory cues through the use of instrument playing and pairing familiar melodies with reading to help with fluency.
c) Lastly, recording final product for individuals to actively witness their improvement and involvement in a community performance to showcase learned skills.

Supportive approaches. Participants noted other important supportive approaches:

a) Visual organization and support in pairing the sound produced in the session with a visual cue.
b) Sequencing.
c) Corporal structure.
d) Rhythmic structure.

e) Improvisation.
f) Interventions that are pedagogically focused.

Details of the program and its design will be outlined in the following section:

Step One: Development of Problem and Program Theories

Identification of the problem. Developmental dyslexia is associated with a learning disability characterized by difficulty with reading and has an effect on psychosocial well-being more specifically pertaining to high levels of anxiety and low self-esteem (Terras et al. 2009). According to the data analysis of the literature and the four participants' interviews, there are three main problems faced by the dyslexia population. The first one was that dyslexia and dyslexic-related symptoms affect 15-20% of the world's population (International Dyslexia Association, 2007) and remains with individuals throughout their lives (Katusic et al., 2001; McCandiss & Noble, 2003; Shaywitz et al.,1990). Despite concentrated academic instruction, 2-6% make minimal progress and many fail to catch-up successfully to age-appropriate levels Torgesen (2000). The second one is that high scores of social, emotional and behavioural difficulties can be correlated with self-esteem (Terras et al., 2009) and regaining psychosocial functioning mainly anxiety and low self-esteem, in addition to the aforementioned psychosocial difficulties is important to children with dyslexia. Lastly, there is a strong need for emotional support and supportive relationships in early childhood as some children may experience a transient loss of self-esteem over experiencing struggles and failures in school. Furthermore, emotional support and supportive relationships are said to be protective factors in the maintenance of a child's self-esteem (Terras et al. 2009; McNulty, 2003; Nalavany, Carawan, & Rennick, 2011) and may in turn protect their opportunities for success from being jeopardized due to untreated problems.

Program theories. The program introduced in this research study encompasses a variety of rhythm-based interventions originating from West African musical practices which forms the foundation of the programs musical content. It also draws from the principles and approaches developed from music therapy practices with children diagnosed with dyslexia, emergent from the literature and interview data. In addition, it emphasizes a group-oriented model of participation. The modus operandi of this program is based on the premise that music therapy

methods when applied in various clinical settings are effective in alleviating symptoms of anxiety (Kerr et al., 2001; Robb, 2000) and in increasing self-worth and esteem (Brunk, & Coleman, 2000; Moreno, 1995). The central theory of this program is also based on the premise that music therapy not only allows for the development of self-esteem through successful educational and social interactions, but it also assists essential learning components and enables the child to use the group as a support system. In addition, this program is based on the overarching premise found in the music therapy literature that drumming is an effective intervention because it facilitates emotional release (Amir, 1999), decreases anxiety (Ho et. al., 2010), and increases levels of self-esteem (Aigen, 1998; Nordoff &Robbins, 1977, 1985). Furthermore, drumming is an effective means of fostering support (Bensimon et al., 2008) and promoting positive psychosocial functioning (Bittman et al., 2003; Quinn, 2002; Strong, 2000)

Malleable mediators. Seven malleable mediators were determined from the data and all fall within the overarching categories of social support and self-esteem.

Social support. Similar to the literature, all four participants acknowledged the importance of social support (Terras et al. 2009; McNulty, 2003; Nalavany et al. 2011). Scott et al. (1992) study found that a search for self-worth and encouragement of talents and hobbies from peers were key factors to the success among children with dyslexia. Self-criticism, social comparison, and increased sensitivity to evaluation by others impact a child's growing social development. Thus it is necessary to present a supportive peer group environment to facilitate a sense of belonging and feelings of mutual support to foster self-esteem. Due to the child's growing capacity for social comparison, it is also necessary for this supportive environment to provide positive experiences of success. It is also necessary for children to receive praise and acknowledgement from their peers. The aforementioned components of a peer social group indicated that self-expression, achieving goals building confidence, witnessing skills while in the presence of peers enables empathetic relationships between group members and empowers the individual to create awareness of the self while maintaining self-worth and efficacy. Within the framework of the group, the number of associated problem areas including visual and auditory processing, and aspects of phonological processing will be addressed. In addition, due to the nature of the program design being specifically related to drumming, rhythm and beat perception will be addressed overall throughout the program. Therefore the four malleable mediators

associated with social support are: offering mutual support while building a strong sense of group identity and feeling of belonging, developing tools and opportunities for expressive communication of emotions, engaging in the act of witnessing oneself and others' creative expression and progress, and supporting phonological, auditory and visual processing needs.

Self-esteem. Participants noted the lack of self-affirmation and self-encouragement among children with dyslexia. Positive thinking strategies such as positive self-talk should be practiced among children who display high levels of anxiety related to academic and literacy tasks. Participants noted the importance of personal support such as self-affirmation, self-encouragement, and positive self-talk as they are beneficial in overcoming any emotional blockage derived from experiences of failure in literacy. Participants indicated that supportive relationships are not limited to family, peers, and teachers and that encouraging the aforementioned positive thinking strategies, are a good form of personal support.

The research participants indicated that gaining confidence through achieving complex tasks and developing mastery in the musical domain were primary avenues in achieving self-esteem. The literature denotes that having experienced mastery, a child can achieve a satisfactory sense of self (Oaklander, 2006). Furthermore, self-concept and self-esteem are important factors that influence motivation, academic achievement and peer relations. Therefore the three malleable mediators associated with self-esteem are: developing feelings of self-worth via the process of mastering a new musical resource, developing musical resources and alternative strategies for dealing with anxiety, and developing self-affirmation strategies through awareness of strengths and resources.

Summary

The following seven malleable mediators were recognized with having the potential to improve positive social support and to improve self-esteem:

Social support

1. To build a strong sense of group identity and feelings of belonging by offering mutual support.
2. To develop tools and opportunities for emotional expressive communication among peers.
3. To engage in the act of witnessing oneself and others' creative expressions and progress.
4. To support phonological, auditory and visual processing needs.

Self-esteem

5. To develop feelings of self-worth via the process of mastering a new musical resource.
6. To develop musical resources and alternative strategies for dealing with anxiety.
7. To develop self-affirmation strategies through awareness of strengths and resources.

Action Strategies

To offer mutual support while building a strong sense of group identity and feelings of belonging. This component will be addressed through drumming circle techniques exercises and games utilized to encourage and build a feeling of trust within the group. The music therapist will initiate opportunities for the building and maintenance of positive peer relationships and mutual understanding through creating a safe, nurturing, and secure emotional space for communication between the children. The music therapist will also encourage peer-to-peer direct communication more specifically through call and response rhythmic activities, turn-taking and rhythmic imitation, thus fostering ensemble playing skills to enable feelings of a safe and mutual supportive environment.

To develop tools and opportunities for expressive communication of emotions. This component will be fostered by opportunities given by the music therapist where children can creatively channel negative emotions through active participation in a drum circle setting. The music therapist will facilitate this strategy to enable non-verbal self-expressive communication through the child's drum while listening to the other drums simultaneously. Each child will be given the opportunity to express his or her feelings using the drum while building self-esteem and confidence within a cooperative rather than competitive environment.

To engage in the act of witnessing oneself and others' creative expressions and progress. The music therapist will address this component by encouraging peers to recognize other peers' competence, and to communicate that recognition to one other. The music therapist will also provide positive feedback and encourage feedback from others about peers' strengths and capabilities. Through rhythmic, drumming, and ensemble playing skills in which each child is in charge of their own part, individuality is promoted as well as the child's awareness of their own uniqueness and contribution to the group.

To support phonological, auditory, and visual processing needs. This component will be addressed through multi-sensory activities encompassing use of visual, auditory, and kinesthetic-tactile pathways. This will be achieved through combining song-stories, rhymes and rhythmic chants with motor, sound and visual stimuli in order to facilitate interaction with academic material. Music therapists will use these interventions as a means of aiding auditory discrimination, sequencing, blending, and segmentation, and ability to perceive consonant sounds, differentiating letter shapes and phoneme awareness.

To develop feelings of self-worth via the process of mastering a new musical resource and skill. This component will first be addressed through using familiarity as a foundation in building new skills. Focus will be on children's positive thinking strategies and abilities, emphasizing what they already know. Secondly, it will be addressed through building upon that foundation and engagement in the outlined drumming interventions indicated in the program design, which gradually develops into more complex rhythmic interventions. This will allow for mastery of percussive skills and recognition of tools and strengths they can use later. The music therapist will assist the children with this process and ensure success by abiding by the easily attainable learning goals and objectives to foster a positive sense of self-efficacy.

To develop musical resources and alternative strategies for dealing with anxiety. The music therapist will address this component through targeting the academic and literacy concepts outlined in the program design. The music therapist will address this while providing children with strategies for managing anxiety inside and outside of the therapeutic space. The music therapist will target academic and literacy components by utilizing related music therapy interventions and techniques in a relaxed and inviting environment with the use of rhythmic activities and techniques that are highly motivating. As previously indicated, the music therapist must also provide healthy emotion regulation tools in the moment to decrease and work through any foreseeable anxiety. Regulation tools include but are not limited to facilitating new ways of processing the emotion by helping children to identify their emotions, allow and tolerate their emotions, and helping them to develop self-soothing and breathing capacities to calm and confront anxieties (Greenberg, 2004). The Dalcroze Eurhythmics method teaches individuals to feel the elements of music, such as pulse, beat, meter, and rhythm, and are connected to human activities of language and emotion (Davis, Gfeller & Thaut, 2008).Therefore Dalcroze Eurhythmics techniques, to help engage the whole body in the physical exploration of musical

rhythm will be utilized. Children will be given opportunities to experience sound vibrations in their body while playing the drum. The music therapist will also support any healthy, positive, physical releases within the body that may be experienced by the children. In addition, basic rhythmic warm-up exercises and simple relaxation techniques paired with academic concepts will allow children to feel a basic pulse with their whole body, observe their emotions, regulate their breathing, and serve as a musical resource in dealing with anxiety.

This program strives to serve as a basis for children to explore and process emotions while engaging in literacy and academic concepts; that can be utilized should they experience anxiety in the classroom. The rhythmic warm-up exercises and relaxation techniques will also provide opportunities for children to regulate breathing and gain internal awareness of their feelings and emotions. In addition it will allow them to develop resources and emotional regulation tools that can be utilized in everyday experiences, outside of the music therapy group. Furthermore, the ability to regulate breathing, and to observe one's emotions and let them come and go are important processes to help regulate emotional distress (Greenberg, 2004). Accordingly, the rhythmic warm-up exercises and relaxation techniques will allow for emotional awareness, emotional regulation, and reduction of emotional stress levels as moods become altered towards relaxation.

To develop self-affirmation through awareness of strengths and resources. The music therapist will address this component through creating an environment of affirmation that motivates and engages the children. Goals for the program will be achievable and measureable and important in relation to feedback for music therapist and child. The music therapist will help the children to give themselves feedback by evaluating their own learning. The music therapist will model positive self-evaluation to children by saying things like "you can do it…, it looks hard but I know you will be able to work it out". Lastly the music therapist will provide encouragement for what the child does know, focusing the child's attention on the fact that he or she has acquired many skills already.

Step Two: Program Procedures and Processes

Program goals and objectives. The following are the goals and objectives for the intervention program:

Goal 1: To improve self-esteem.

Objective 1.1: Participants will recognize their strengths using drumming techniques (progressively increasing in difficulty).

Objective 1:2: Participants will use basic rhythmic warm-up exercises and simple relaxation techniques paired with academic concepts for promotion of decreased anxiety.

Objective 1.3: Participants will develop awareness, identify, and explore an area of strength and skill, and positive self-evaluation to develop an increased self-affirmation.

Objective 1:4: Participants will use drumming techniques as tools and opportunities for emotional expression within a cooperative rather than competitive environment.

Goal 2: To improve positive social support.

Objective 2:1: Participants will engage in group music making and peer call and response rhythmic, turn-taking and rhythmic imitation interventions to increase opportunities for interaction with other participants.

Objective 2.2: Participants will engage in peer-to-peer direct communication and interaction through group call and response rhythmic activities, turn-taking and rhythmic imitation to enable feelings of a safe and mutual supportive environment.

Objective 2.3: Participants will provide and receive positive feedback by recognizing peer competences, strengths, and capabilities and communicating that recognition to one another.

Objective 2:4: Participants will engage in the act of witnessing themselves and others' creative expression and progress within the group.

Objective: 2:5: Participants will engage in song-stories, rhymes and rhythmic chants paired with multi-sensory components to address phonological, auditory and visual skills.

Program referral and intake procedures. The program will consist of 6 to 8 children between the ages of 10 to 12 years who have been diagnosed with dyslexia, and can be referred by parents and guardians, teachers and or special education teachers who work at the school the child attends. Priority will be given to children displaying a strong affinity for music as well as those showing lack of motivation, high levels of anxiety, and low self-esteem. Upon receipt of the referral, the music therapist will meet with the referrer and parent to complete the author's

music therapy intake form (See Appendix D) and follow the Special Education Music Therapy Assessment Process (SEMTAP, Brunk & Coleman, 2000). The SEMTAP places emphasis on tasks connected to existing objectives in the individualized education plan (IEP). Therefore, the music therapist will follow the SEMTAP model in assessing the individual's psychosocial and musical skills while targeting IEP goals and objectives that parallel the literacy and psychosocial goals and objectives outlined in the program.

Session format and phase structure. Based on a detailed analysis of the data, the material was divided into five phases within a 16-week program to parallel one single school term. Each phase contains three to four sixty minute sessions and will follow the same format, designed to address the goals and objectives outlined above. Therefore the descriptions of the phases will only outline the session plans themselves.

All sessions will be structured as follows: welcome, warm-up, group focus and team building, reading development component, drumming development component intervention, and closing. It should be recognized that this is an outline and that sessions should be altered to best fit the developing needs of each individual child.

Phase one. Weeks 1-3

Essential content. The essential content for Phase One is:

1. To aid participants in creating a welcoming and comfortable environment fostering mutual support.
2. To aid participants in building feelings of trust and increased awareness of others within the group.
3. To facilitate musical and non-musical interactions among participants to establish connections.

Welcome. The empathic style of the group begins on the first day of the program, before even distributing the drums. During the first week of phase one the participants will be briefed on what to expect in the program, as well as goals of working together and the importance of paying attention to each other's feelings within the group. The participants will then be asked to make ground rules for the group. The music therapist may suggest topics such as respect and treating peers kindly for example, if they have not been mentioned. Each session will open with a rhythmic name chant paired with various percussive instruments. During the first phase and subsequent phases hereafter each participant will engage in a "name chant" where participants

will be welcomed into the session by having a turn for their name to be chanted rhythmically by the group while the syllables are beaten out on the drums. During this time the participant whose name is being played out rhythmically will move around the inside of the circle to shake the hand of each member. At this time the member will pause what they are doing for a brief moment in order to shake hands. The music therapist will encourage creative ways to shake ones hand by demonstrating an adaptation of a handshake done by some in Ghana, West Africa.

Warm-up. Participants will engage in various types of activities to encourage and build feelings of trust and comfort increased awareness of others within the group. In order to internalize rhythm, during the first week of phase one the music therapist will introduce participants to call and response and help participants gain internal organization through the use of body percussions. Participants will explore the call and response form through the use of body percussions to replicate the rhythm and pattern produced by the music therapist. The participants will engage in clapping and marching to the song "Tuu Tuu Gbovi" consisting of a variety of tempos and salient rhythms that will be used in two consecutive weeks. In order to use their own internal rhythms, during the first week participants will each initiate movements and the group will respond by imitating. The music therapist will also initiate movements for participants to follow. During the second week of phase one, participants will each initiate rhythmic hand clapping to the beat while the music therapist plays the song. Lastly, during the third week of phase one, participants will each initiate rhythmic stomping of their feet to the song, in which the group will respond by imitating the movement.

Group focus and team building. The music therapist will initiate an "affirmation circle" to promote feelings of acceptance and validation. Participants will be given a choice between using body percussions or percussive instruments to present a rhythmic pattern that the group will imitate. Participants will also be encouraged to use sound and movement to foster musical independence and creativity. During the first phase the music therapist will also engage participants in a group discussion singing and chanting phrases such as "I cope well with my dyslexia". Participants will respond to each phrase by playing a percussive instrument. Loud and fast tempos will be associated when a participant strongly agrees with the phrase, and quiet slow tempos will be associated when a participant strongly disagrees with the phrase. (See Appendix E for sample discussion questions.)

Reading development component. Each session includes both receptive and active music such as listening, singing, instrument playing and movement paired with a reading skill. During the phases the music therapist will engage participants in musical interventions supporting phonological tasks: auditory blending, auditory segmenting, and phonemic manipulation. During phase one, flash cards with segmented words will be placed around the room, and while playing a rhythmic ostinato (See Appendix F for sample rhythms) the music therapist will initiate the blending of words presented in the segmented form accenting each segment in the rhythmic pattern. For example, the music therapist chants the sounds "p-l-a-n-t" and allows participants to join in repeating multiple times and ending chanting “plant”. The music therapist will use support words such as “trust”, etc. or words related to attributes participants like about themselves. Participants will then chant the segmented words while hitting their own drum. The music therapist will also engage participants in a musical intervention supporting auditory segmenting. Using the ostinato patterns the music therapist will chant the word and the participants will respond by segmenting the word into its individual sounds. For example the music therapist will chant the word “plant”, at which participants respond rhythmically chanting the segmented sounds “p-l-a-n-t”.

Drumming development component. The music therapist will introduce the basics of hand drumming: positioning the drum, posture, hand positions, and where to find the bass and the tone. The music therapist will practice bass and tone and encourage participants to replicate the sounds. Once participants learn the different sounds, the music therapist will give participants an opportunity to explore the different sounds in their own way. The music therapist will then continue with two short rhythmic sequences, each containing four beats and separated by four beats of rest. Participants will be encouraged to differentiate between the two rhythmic sequences and state whether the two rhythmic sequences were the same or different. This will continue for several trials. The music therapist will then encourage participants to each create two different rhythmic sequences and have group members guess the difference. The activity will finish by allowing each participant to take turns taking on the role as the conductor. Conductors will indicate that they wish for the group to go faster, slower, louder and softer using their hands or a mallet. The conductor will also indicate when they would like each group member to start or stop.

Closing. Each session will close with a ritual in which participants will gather in a circle to engage in a rhythmic breathing relaxation exercise and be encouraged to emphasize what feelings they are leaving the session with through rhythmic breathing, sounds or a body percussion. Participants will begin by exploring a range of feelings such as: feeling sad, happy, afraid, and confident for example to be able to identify and name them.

Phase two. Weeks 4-6

Essential content. The essential content for Phase Two is:

1. To present basic drumming techniques in an achievable, unintimidating, and engaging manner to develop competence in drumming.
2. To provide tools and opportunities for emotional expressive communication among participants.

Welcome. Each session will open with a rhythmic name chant paired with various percussive instruments as described in the first phase.

Warm-up. Participants will engage in guided interactive drumming, where the music therapist will use an adapted version of Kalani (2011) "Let's all play our drum" activity. Music therapists will invite participants to play one note on the word "Drum" as the music therapist sings out loud "Let's all play our drum". The music therapist will prompt this action by making each word distinct and rhythmic, for example "Ta-te Ta-te TA!". The music therapist will proceed to increase and decrease in tempo and dynamics and explore variations in rhythm: "All play our DRUM" (te Ta-te TA), and "Play our DRUM" (Ta-te TA) (Kalani, 2011).

Group focus and team building. The music therapist will engage participants in a rhythmic movement intervention adapted from a Dalcroze eurhythmics' technique. First the music therapist will demonstrate possible movements such as reaching up to the sky, tapping feet as well as various West African movement styles and proceed to encourage participants to create these movements while listening to the music therapist singing "Yalele" and playing a drum beat on the djembe. Music therapists will also encourage participants to listen for the changes in the music (dynamics and tempo) and change their movements accordingly. The music therapist will then encourage participants to create a strong movement for each accented beat.

Reading development component. To the tune of "Fanga Alafia" the music therapist will improvise words to a song asking questions about the starting sounds of pictures on a flash card.

For example “Which picture starts with, the letter l?” The participants will then respond with “This picture starts with the letter l” while pointing at the appropriate picture.

Drumming development component. The music therapist will introduce participants to the rhythmic patterns of instruments of the “Kpanlogo” ensemble by first clapping and vocalizing the patterns. Music therapists may choose to encourage participants to construct their own verbalizations of the patterns. For example “Apples are red”. The music therapist will have participants choose various parts to each pair of participants to focus on and assist the group in playing the various parts together. This activity will be included in subsequent weeks to build upon the skills obtained until the end of program.

Closing. Each session will close with a ritual encompassing rhythmic relaxation breathing techniques and sharing what emotions each participant is leaving with using rhythmic breathing, sounds or a body percussion. Participants will project emotions they feel their peer is demonstrating and share them with the group.

Phase three. Weeks 7-9

Essential content. The essential content for Phase Three is:

1. To provide opportunities for participants to take on leadership roles in musical experiences (e.g., participants leading rhythmic warm-ups).
2. To present basic drumming techniques in an achievable, unintimidating, and engaging manner to develop competence in drumming.

Welcome. Each session will open with a rhythmic name chant paired with various percussive instruments as described in the first phase.

Warm-up. The music therapist will lead the call and response movement chant “Kye Kye Kule” during the third phase. Over the first week of phase three, the music therapist will arrange participants in two rows, facing each other and demonstrate the chant while establishing a beat. The music therapist will say the words out loud and encourage participants to memorize them. Over the second and third week of phase three, participants will learn the hand motions and movements that accompany it. During the third week, one set of participants will be given the opportunity to lead the call while the other group of participants respond.

Group focus and team building. Participants will engage in a group rhyme generation activity in which they will generate words that rhymed through a song. The music therapist will

begin this intervention by engaging participants in the song "Sansa Kroma" and singing nonsense words that rhyme with the names of each participant.

Reading development component. Participants will engage in an adapted version of the Wilson Reading System Sound Tapping technique by tapping each sound in one word on the drum using their fingers. The music therapist will encourage participants to first rub their hands on the drum to explore its texture. The music therapist will then encourage participants to tap out positive self-affirming support words such as "bold", "ready", "strong" on the drum representing each sound in the word with one tap. The music therapist will then engage in an adaptation of an Orton- Gillingham (Ritchey, & Goeke, 2006) technique, in which the music therapist then encourages participants to draw each letter with their fingers on the face of the drum. The music therapist will accompany each movement by singing the directions of how to form each letter. The music therapist will also alter timbre and sounds with the voice to mimic the movement. For example for the letter "i" the music therapist sings "Dot!" sharply.

Drumming development component. The music therapist will sing a phrase from the song "Obwisana" while playing two separate beats and ask participants to differentiate between the two tempos. Participants will engage in several trials and then proceed to improvise various tempos and rhythms to represent their current emotion.

Closing. Each session will close with a ritual encompassing rhythmic relaxation breathing techniques and sharing what emotions each participant is leaving with using rhythmic breathing, sounds or a body percussion. The music therapist will focus on emotions toward supportive relationships. Participants will be asked to display a rhythmic breathing, sound or body percussion that represents how they feel about the support from their parents, teachers and the group.

Phase four. Weeks 10-12

Essential content. The essential content for Phase Four is:

1. To establish various leadership roles while recognizing strengths and preferences.
2. To provide opportunities for participants to develop self-affirmation through awareness of strengths.

Welcome. Each session will open with a rhythmic name chant paired with various percussive instruments as described in the first phase.

Warm-up. Participants will first engage in an egg shaker improvisation and then segue into an egg shaker warm up (adapted from Reuer, Crowe, Bernstein, 2007*)*. Participants follow auditory cues indicating when to pass the shaker back and forth between their left and right hand. The music therapist will lead the accompanying melody to be sung by participants during the movement.

Group focus and team building. The music therapist will engage in a group patschen adapted from (Reuer et al.,2007*)*. The music therapist will instruct participants to do a four beat combination of knee pats involving both theirs as well as their neighbor's laps. For the first beat, participants will pat their laps; second pat their laps crossing their hands. For the third beat, participants will pat their laps and for the fourth beat, they will pat their neighbors lap on both sides. The music therapist will lead the song "Kaa Fo" while participants engage in this group rhythm making.

Reading development component. Participants will sing songs to stories to aid reading comprehension skills. The music therapist will use Anansi stories from West African folklore. For example, the music therapist will show participants a book by Bobby Norfolk entitled, "Anansi and Turtle Go to Dinner" and improvise songs using various percussive instruments with participants to help them remember and process the order of events in the story. Participants will also use their instruments to represent a character or entity in the story. For example a participant is required to play the drum each time the sun or the character "Anansi" was mentioned in the sound story. The music therapist will then engage participants in a discussion about the moral and emotions and feelings that came up in the story and how they may relate to them.

Drumming development component. Because African drum patterns imitate the rhythms and the tonality of speech, participants will engage in singing a rhythmic sequence using tone languages. The music therapist will play a short rhythmic sequence and demonstrate singing the syllables associated with a certain tone and participants will be encouraged to sing along. The rhythmic sequences produced by the music therapist will gradually increase in complexity. During this phase the music therapist will divide participants into groups and teach each group a separate rhythmic pattern to play on the drum together with the whole group. Participants will be encouraged to first approach the rhythmic through singing before playing it on the drum (See Appendix F).

Closing. Each session will close with a ritual encompassing rhythmic relaxation breathing techniques and sharing what emotions each participant is leaving with using rhythmic breathing, sounds or a body percussion. The music therapist will focus emotions toward individual abilities. Participants will be asked to think of things they believe they are good at. Participants will be asked then to display a rhythmic breathing, sound or body percussion to parallel emotions that arise with regards to those abilities.

Phase five. Weeks- 13-16

Essential content. The essential content for Phase Five is:

1. To provide opportunities for engagement in the act of witnessing participants and their peers creative expression.
2. To aid participants in recognizing their own and other's progress in seeing their progress and others progress, through re-visitation of material created during the program.
3. To provide opportunities for emotional expressive communication regarding the conclusion of the program.

Welcome. Each session will open with a rhythmic name chant paired with various percussive instruments as described in the first phase.

Warmup. The music therapist will engage participants familiar phrase rhythm training (Reuer et al., 2007). Participants will choose a familiar nursery rhyme and as a group say it out loud several times with assertiveness to internalize the rhythm. The music therapist will then play the rhythm of the phrase on the drum and proceed to encourage participants to do so as well. The music therapist may divide the group into two groups and have each group play alternating phrases in the rhyme.

Group focus and team building. Participants will be encouraged to play a steady ostinato lead by the music therapist on a percussive instrument. The music therapist will then encourage participants to take turns in improvising an eight measure solo using sounds such as "sh", "ah", "oh" for example while the rest of the group continues the ostinato.

Reading development component. The music therapist will engage participants in a "Movement word build" intervention adapted from Register (2007). The music therapist will first engage participants in the tune of the song "Kaa Fo" and then proceed to give each participant a

flash card with either a single letter (for example, b, c, l) or a sound blend (for example, at). The music therapist will then encourage participants to pair up with an appropriate letter or sound before the song is over. At the end of the song the music therapist will encourage participants to check their work and discuss what was done well among peers. Lastly they will pronounce the word that they built for the rest of the group.

Drumming development component. Participants will engage in drum circle improvisations where participants can explore different timbres, textures, dynamics, and creativity. The music therapist will start by structuring improvisations asking participants to think about how their dyslexia affects them and to demonstrate how they feel about that effect pertaining to themselves on the drum. Participants will then individually play their drum patterns and be asked to share what it is they are feeling. The music therapist will then allow participants to freely engage in drumming all together while thinking of those emotions. The music therapist should allow this improvisational drumming for several moments to allow for entrainment and positive physical releases should they occur.

Closing. Each session will close with a ritual encompassing rhythmic relaxation breathing techniques and sharing what emotions each participant is leaving with using rhythmic breathing, sounds or a body percussion. The music therapist will focus individuals' emotions toward their abilities for a second time. However, participants will be asked to share things they believe their peers are good at. Participants will be asked then to display a rhythmic breathing, sound or body percussion to parallel emotions that arise after hearing what their peers feel their abilities are.

Chapter 5. Discussion

This study combines knowledge obtained from literature in the fields of music therapy, music education, psychology; insights and themes that emerged from interviews with professionals, and knowledge from the author's clinical training and experience. All of this was used to construct a detailed music therapy drumming intervention that addresses the psychosocial needs, mainly self-esteem and anxiety as well as the learning needs of children diagnosed with developmental dyslexia. The overarching aims of the intervention program are to improve psychosocial functioning and to improve positive social support. Active and receptive music therapy techniques paired with traditional African musical practices were incorporated into the intervention design to support said overarching aims by fostering the development and maintenance of participants' own resources and strengths. Examples of the African musical practices are: use of polyrhythm, call and response, imitation, matching, variation, layering, soloing with group support, improvisation, and integration of the creative composition.

This proposed program provides tangible means in enabling children diagnosed with dyslexia to develop compensation strategies that exist on functional and psychological levels. This entails creating awareness of children's areas of strength to make up for cognitive limitations, as well as assisting children in the management of the negative feelings related to learning difficulties that negatively affect self-esteem. In addition, this program was designed for children between the ages of 10-12. However, concepts may be revised according to age and level of development.

This study sought to answer the primary research question: "What is the structure of a music therapy program that uses drumming for children between the ages of 10-12 who have been diagnosed with dyslexia?" as well as the subsidiary questions: How does drumming address the learning needs of children with dyslexia? And how does drumming address the psychosocial needs of children with dyslexia? Results of this study suggest that drumming potentially addresses the learning needs of children with dyslexia because aspects such as rhythm, structure and sequencing are common components between drumming, music perception, and language (Lamb & Gregory, 1993). In addition, auditory analysis skills such as rhythmic and melodic discrimination are necessary for music perception. Processing the auditory components of speech such as blending, and segmenting sounds is also necessary for music perception (Lamb &

Gregory, 1993). It is reasonable to suggest that these auditory analysis skills may be associated with reading development (Lamb & Gregory, 1993) and that the capacity to maintain steady rhythms is related to reading ability, cognitive and physical organization (Snyder, 1997). Moreover, drumming takes away the complexity of language and words, and its rhythm supports visual organization and structure attributes required in reading.

Results of this study also showed that drumming can potentially address the psychosocial needs of children with dyslexia as it promotes expression as well as physical and emotional releases (Amir, 1999). Participatory drumming allows participants to collectively share and express their feelings fostering mutual support which in turn allows for understanding and acceptance of shared difficulties. In addition it helps to maintain the development of positive self-esteem and successful psychosocial adjustment. Furthermore, children have been shown to experience inner stability and self-confidence through engaging in basic and complex rhythmic patterns (Aigen, 1998; Nordoff & Robbins, 1977, 1985). Drumming in music therapy encourages social interaction, while also offering opportunities for children to establish and connect with themselves, gain internal awareness of self through organization, and build skills in hopes that these will transfer into their daily lives.

Although existing studies have reported positive effects of music on reading skills, no study thus far has focused on music therapy interventions to address the learning needs of children with dyslexia and the psychosocial issues including anxiety and self-esteem in this population.

This study contributes to the field of music therapy as there are no known publications of music therapy programs that target the learning needs as well as the psychosocial needs of the dyslexia population. This research study formulates an intervention that once piloted and refined, could be implemented into schools to address the outlined needs of this population. This research study and development of this program thus promotes and encourages opportunities for the collaboration among individuals in music therapy and education. It is hoped that this program can serve as a catalyst to opening up further music therapy positive social support and self-esteem enhancement programs for children with dyslexia. Needless to say, this program is not intended to supplement the current school curriculum and not intended to replace the music or reading components existing in the curriculum. The results of this study may also help other professionals in the field to gain further insight on the emotional support and supportive relationships which

help in the maintenance of a child's self-esteem, as well as further knowledge of creative interventions and programs to support those needs and others.

Limitations

This study is limited to the knowledge contained in the current music therapy literature with relation to the population of individuals with dyslexia. The use of drumming as an intervention has been heavily supported in music therapy however little was found with relation to the population of individuals with dyslexia. Also little was found on specific music therapy interventions with this population. This research project is also limited by the author's experience as a music therapist working with children with dyslexia. Of the four participants one worked with children with various learning disabilities who experienced difficulties in reading, but were not diagnosed with dyslexia. In addition, it was the intention of the author to interview music teachers (recruited through the Canadian Dyslexia Association) to obtain a balanced representation of music education and music therapy working with this population, as well as to incorporate a variety of concepts from the different disciplines**.** Response to the recruitment request was not received from the Canadian Dyslexia Association, therefore a balanced representation of the two fields working with this population, was only possible through relevant literature. Consequently a variety of techniques, interventions and strategies were only obtained from that of music therapists. Lastly, it was beyond the scope of this study to carry out all five steps outlined in Fraser and Galinsky (2010)'s methodology for creating intervention design research. Therefore, this study is also limited to a program that has been designed but not yet tested. Further areas for study would be to "refine and confirm program components in efficacy tests", "test effectiveness in a variety of practice settings", and "disseminate program findings and materials".

Conclusion

This study presented a 16- week music therapy drumming intervention divided into 5 phases to address self-esteem, anxiety and the learning needs of children who have been diagnosed with dyslexia. Once tested and refined, this program can be used in music therapy clinical practice and can be the basis for further research.

The results of the design serve the purpose of answering the established research question.

Therefore a functional music therapy program was created, providing concrete examples of techniques for music therapists to develop further knowledge of how music therapy can address the needs of children with developmental dyslexia.

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Appendix A: Participant Recruitment Notice

Recruitment Notice for Music Therapists:

Research Study: A Music Therapy drumming intervention in support of children with dyslexia

Hello, my name is Grace Hunte and I am a Master's student in the MA of Creative Arts Therapies (Music Therapy option) at Concordia University, in Montreal, Quebec, Canada. My faculty supervisor is Dr. Guylaine Vaillancourt of Concordia University, in Montreal, Quebec, Canada.

I am seeking music therapists working with children diagnosed with dyslexia to participate in a research study that involves a 45-60 minute interview regarding the development of a music therapy program with the use of drumming to address psychosocial needs and learning goals for children diagnosed with dyslexia.

PARTICIPANT REQUIREMENTS:
Participants are required to currently be an accredited music therapist who has at least 2 years of experience with this population.

The interview will be conducted via Skype, over telephone or in person at their convenience to answer questions pertaining to their experience and music-related interventions and overall work with this population. Participants will receive a copy of the interview questions prior to the start of the interview to give them an opportunity to time reflect upon the questions.

This study will formulate an intervention that can be implemented into schools in the future to address the learning and psychosocial needs of this population while creating further exposure to the field of music therapy. As result, this research study will allow music therapists to contribute to the profession. The results of this study may also help participants and other professionals gain further insight into the learning goals and psychosocial needs as well as how to support children with dyslexia. The results of this study will also further participants and others awareness of creative interventions and programs to support the above needs.

Please note that full confidentiality is provided. The Researcher will know the "real" identity of participant, but this identity will not be disclosed.

For more information **please contact**:
Grace Hunte
graceann_hunte@yahoo.com
416-420-8895

Guylaine Vaillancourt, MTA, PhD, Research supervisor
g.vaillancourt@concordia.ca
514-848-2424 ext. 5670

Recruitment Notice for Music Teachers:

Research Study: A Music Therapy drumming intervention in support of children with dyslexia

Hello, my name is Grace Hunte and I am a Master's student in the MA of Creative Arts Therapies (Music Therapy option) at Concordia University, in Montreal, Quebec, Canada. My faculty supervisor is Dr. Guylaine Vaillancourt of Concordia University, in Montreal, Quebec, Canada.

I am seeking music teachers working with children diagnosed with dyslexia to participate in a research study that involves a 45-60 minute interview regarding the development of a music therapy program with the use of drumming to address psychosocial needs and learning goals for children diagnosed with dyslexia.

PARTICIPANT REQUIREMENTS:

Participants are required to currently be a primary/elementary school level music teacher who has at least 2 years of experience with this population.

The interview will be conducted via Skype, over telephone or in person at their convenience to answer questions pertaining to their experience and music-related interventions and overall work with this population. Participants will receive a copy of the interview questions prior to the start of the interview to give them an opportunity to time reflect upon the questions.

This study will formulate an intervention that can be implemented into schools in the future to address the learning and psychosocial needs of this population. The results of this study may also help participants and other professionals gain further insight into the learning goals and psychosocial needs as well as how to support children with dyslexia. The results of this study will also further participants and others awareness of creative interventions and programs to support the above needs.

Please note that full confidentiality is provided. The Researcher will know the "real" identity of participant, but this identity will not be disclosed.

For more information **please contact**:

Grace Hunte
graceann_hunte@yahoo.com
416-420-8895

Guylaine Vaillancourt, MTA, PhD, Research supervisor
g.vaillancourt@concordia.ca
514-848-2424 (ext. 5670)

Appendix B: Consent Forms

CONSENT TO PARTICIPATE IN A MUSIC THERAPY DRUMMING INTERVENTION IN SUPPORT OF CHILDREN WITH DYSLEXIA

I understand that I have been asked to participate in a research study being conducted by Grace-Ann Hunte (e-mail: graceann_hunte@yahoo.com) of The Department of Creative Arts Therapies, Concordia University, under the supervision of Guylaine Vaillancourt, PhD (e-mail: g.vaillancourt@concordia.ca; Telephone number: 514-848-2424 ext. 5670).

A. PURPOSE

I have been informed that the purpose of the research is to investigate what design for a music therapy program would benefit children diagnosed with dyslexia that addresses psychosocial needs and learning goals.

B. PROCEDURES

- I understand that I will be asked to provide basic information about myself as well as information related to my work with the with dyslexia population through an interview over Skype or in person.
- I understand that this information will be obtained during an interview that will be conducted via Skype or in person at a time that is convenient to me, and will last approximately 45-60 minutes.
- I understand that notes will be written during the interview and that the interview will be audio recorded.
- I understand that all data including audio recordings and any information I provide during the interview will be kept confidential and will only be used for data collection purposes.
- I understand that all interview notes, audio recordings, or electronic records will be kept in a secured and locked cabinet/cupboard or on a password protected hard drive and will be deleted after the completion of the thesis.
- I understand that the primary researcher and faculty supervisor are the only two individuals involved in the research who will have access to this information as well as my name.
- I understand that if I don't want to be audio taped, I will not be able to participate in the study.

C. RISKS AND BENEFITS

- I understand that to the best of the researcher's knowledge there are no foreseeable risks in participating in this research study. However, in the event that I unintentionally reveal identifying information about a child I have worked with, the researcher will respect the privacy of the individual being discussed and ensure that the identifying factors of the statement be kept confidential.
- I understand that if I make a statement that I feel uncomfortable being documented, I have the right to recant my statement and it will be kept confidential.
- I understand that the results of this research may help other professionals to gain further knowledge of creative services and programs in support of children with a diagnosis of dyslexia.

D. CONDITIONS OF PARTICIPATION

- I understand that my participation in this project is completely voluntary and that I am free to decline to participate, and have the right to decline to answer any question without consequence, at any time prior to or at any point during the interview.
- I understand that I have the right to end the interview and discontinue participation at any time without penalty.
- I understand that I have the final decision on whether or not I want any information at all gathered about me to be included should I chose to discontinue or withdraw from the study.
- I understand that if I withdraw from the study (i.e., end the interview part way through), the researcher will still be able to use the written notes and audio recordings of the interview up to that point unless I notify the researcher that I want to withhold all information gathered.
- I understand that if I decide to withdraw and not have any information gathered about me included in the study, my information will be destroyed and not included as part of the research project.
- I understand that the researcher will not identify me by name in any reports using information obtained from this interview and that my participation in this study is CONFIDENTIAL (i.e., the researcher and group leaders will know, but will not tell anyone else about my participation in this study).
- I understand that the results from this study may be published and/or be presented in training and/or academic contexts (i.e., professional conferences, workshops, university classes etc.)

By signing below and returning this form, I am consenting to participate in this project which requires an interview via Skype or in person as designed by Grace-Ann Hunte.

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT AND THE EXPLANATION PROVIDED TO ME. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

NAME (please print)_____

SIGNATURE_____

If at any time you have questions about the proposed research, please contact the study's Principal Investigator; Dr. Guylaine Vaillancourt, Professor of Music Therapy, Concordia University, 514-848-2424 ext. 5670, g.vaillancourt@concordia.ca
If at any time you have questions about your rights as a research participant, please contact the Research Ethics and Compliance Advisor, Concordia University, 514.848.2424 ex. 7481 ethics@alcor.concordia.ca

Appendix C: Interview Questions

For the Music Therapist

A- Children with dyslexia

1) Can you describe what it is like to work with children with dyslexia?
    a. Can you describe the positive outcomes if any, that you have encountered while working with children with dyslexia?
    b. Can you describe the challenges if any, that you have encountered while working with children with dyslexia?
    c. Can you describe particular challenges if any, that you have observed in children with dyslexia?

2) Can you describe any particular factors if any, that you have observed that influenced the performance of a child with dyslexia?

3) How would you describe the prominent psychosocial disposition of children with dyslexia?

4) How would you describe the self-esteem of the children with dyslexia?

B- Music therapy and children with dyslexia

5) What types of music therapy interventions were implemented, when working with this population?
    a. How were these music therapy interventions implemented?
    b. What was the desired outcome from using these music therapy interventions?

6) What areas of need did these interventions address?
    a. What were your goals?

7) How do these interventions address the needs of children with dyslexia?

8) What music therapy interventions implemented did you find:
    a. worked with this population? Why?
    b. did not work with this population? Why?

9) Can you describe changes you have observed in a child after the music therapy intervention was implemented, if any particular:
    a. positive changes?
    b. negative changes?

10) Approximately what was the time frame in which it took for you to begin observing progress if any?

C-Drums and children with dyslexia

11) Have you ever used rhythm based music therapy interventions with this population? If so, what interventions?

12) What areas of need did these interventions address?

    a. What were your goals?

13) How do these interventions address the needs of children with dyslexia?

14) What rhythmic based music therapy intervention did you find:
    a. worked with this population?
    b. did not work with this population?

15) What observations if any, have you made :
    a. during the rhythmic based music therapy intervention?
    b. after the rhythmic based music therapy intervention?

16) What techniques if any, have you used to reinforce a desired response with this population?

17) Is there anything you would like to add to this specific section?

18) Is there anything you would like to add overall?

For the Music Teacher

A-Children with dyslexia

1) Can you describe what it is like to work with children with dyslexia?
    a. Can you describe the positive outcomes if any, that you have encountered while working with children with dyslexia?
    b. Can you describe the challenges if any, that you have encountered while working with children with dyslexia?
    c. Can you describe particular challenges if any, that you have observed in children with dyslexia?
2) Can you describe any particular factors if any, that you have observed that influenced the performance of a child with dyslexia?
3) How would you describe the prominent psychosocial disposition of children with dyslexia?
4) How would you describe the self-esteem of the children in this population?

B-Creative Interventions and children with dyslexia

5) What interventions implemented in the school or in your classroom if any, were presented in this setting?
    a. How were these interventions implemented?
    b. What was the desired outcome from using these interventions?
6) Can you describe any creative interventions implemented in the school or in your classroom?
    a. How were these interventions implemented?
    b. What was the desired outcome from using these interventions?
7) What interventions implemented in the school or your classroom if any, did you find:
    a. worked in this setting? Why?
    b. did not work in this setting? Why?
8) Can you describe changes you have observed in a child after the intervention was implemented, if any particular:

a. positive changes?

b. negative changes?

C-Drums and children with dyslexia

9) Have you ever used rhythm based activities in your classroom? If so, what activities?

10) What rhythmic based intervention did you find:

a. worked in your classroom?

b. did not work in your classroom?

11) What observations if any, have you made :

a. during the rhythmic based activity?

b. after the rhythmic based activity?

12) What techniques if any, have you used to reinforce a desired response with this population?

Appendix D: Intake Form

General Information			
Name:	**Birthdate:**		
Referred by:			
Parent/Guardian Contact Number:	Parent/Guardian e-mail:		
What language does the participant know/speak?	Language spoken in home environment:		
Has the participant been formally diagnosed with dyslexia? **Date diagnosed:**		YES	NO
Are there any other co-existing conditions? **Diagnoses/Condition:**		YES	NO
Does the individual receive any therapies (OT, PT, SLP, Counseling) at school? **Therapy:**		YES	NO
Current Academic Information			
School:			
Grade:			
Teacher:			
Current IEP Plan/ Treatment Plan **Please Indicate:**			
How is the individual within the academic setting?			
What do you consider the individual's strengths academically			
How would you rate the individual's school grades:			
Poor	Fair	Good	Excellent
How would you rate the individual's attitude towards school:			
Poor	Fair	Good	Excellent
Favourite Subject	Least favourite subject		
Areas of difficulties (Please check):			
☐ Organization	☐ Memory	☐ Blending Sounds	☐ Phoneme Segmentation
☐ Rhyming	☐ Alliteration	☐ Writing	☐ Spelling
☐ Sequencing	☐ Directionality	☐ Phoneme Deletion	☐ Phoneme Matching

	Phoneme Substitution		Delayed Speech		Light Sensitivity		Auditory Processing

Psychosocial Information		
Does the individual display emotions appropriately?	YES	NO
Does the individual have any psychological or psychiatric conditions? **If Yes, please describe:**	YES	NO
Does the individual display a lack of motivation?	YES	NO
Does the individual display a lack of self-esteem?	YES	NO
Please describe any abnormal fears or anxieties displayed by the individual.	YES	NO

How often do the following behaviours occur when approaching academic work?			
Lack of confidence:	Often	Sometimes	Never
Frustration:	Often	Sometimes	Never
Anxiety:	Often	Sometimes	Never
Low self-esteem:	Often	Sometimes	Never

Has the individual been involved in any therapeutic social skills groups?	YES	NO
Does the child participate appropriately in group activities?	YES	NO
How does the individual respond/interact with friends and peers?	YES	NO

Please describe the individual's current support system:

	Mother		Father		Sibling(s)		Friends/Peers
	Teacher(s)		Community Group		Support Group		Other Therapies

What benefit do you anticipate from this music therapy program?

Is there anything else you would like to share?

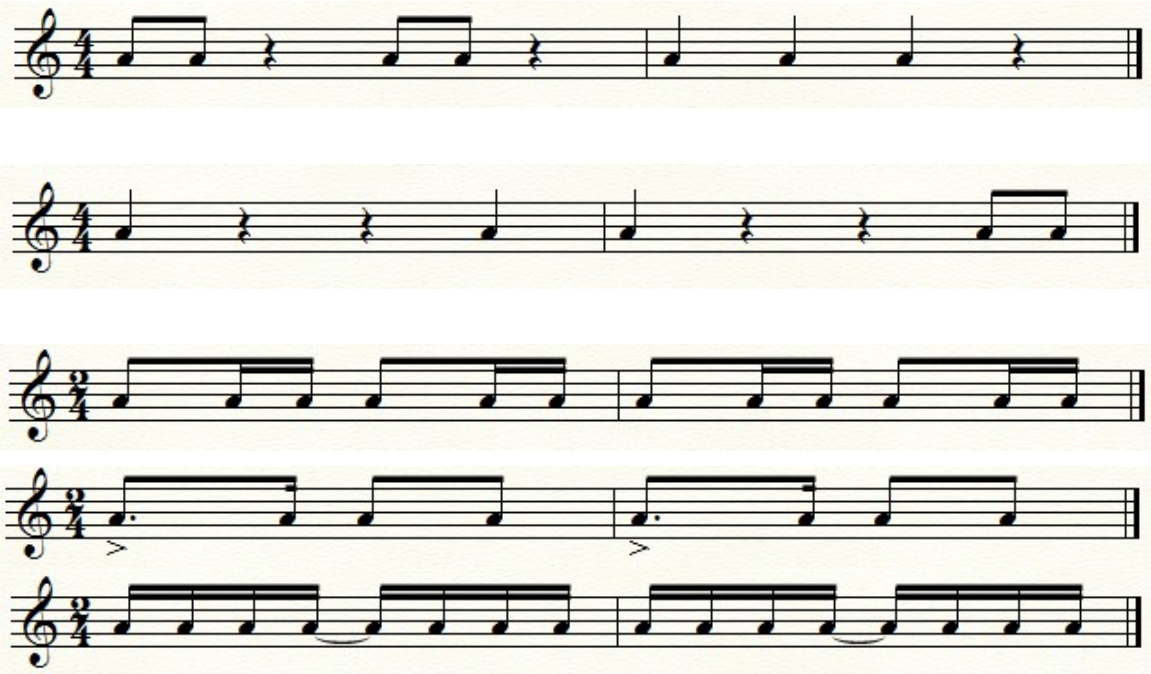
Created by: Grace-Ann Hunte, 2015

Appendix E: Sample Discussion Questions

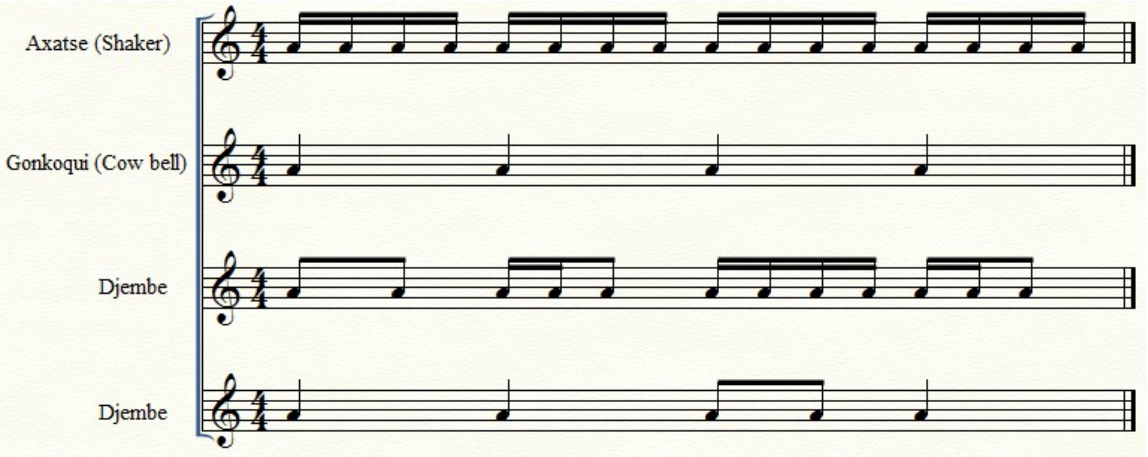
1) I am treated differently because of my dyslexia.
2) I don't have many friends because of my dyslexia.
3) I understand why I have difficulties at school.
4) I talk to my parents about any problems I have.
5) I think my reading spelling difficulties will get better over time.
6) I want to learn more about why I have difficulties in school.
7) I get down/upset when I have reading/spelling difficulties at school.
8) I usually tell others about my dyslexia.
9) I felt relieved when I was told about my dyslexia.
10) I felt embarrassed when I was told about my dyslexia.
11) I felt there was nothing special when I was told about my dyslexia.

Appendix F: Sample Rhythms and Ostinato Patterns

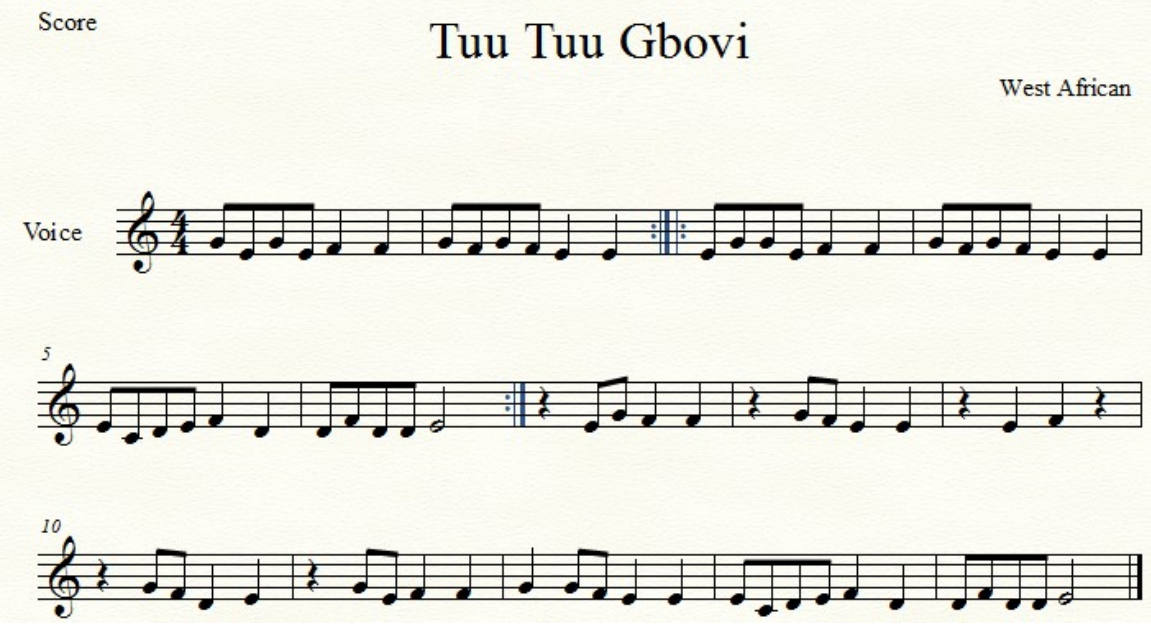
Sample Ostinato Patterns:

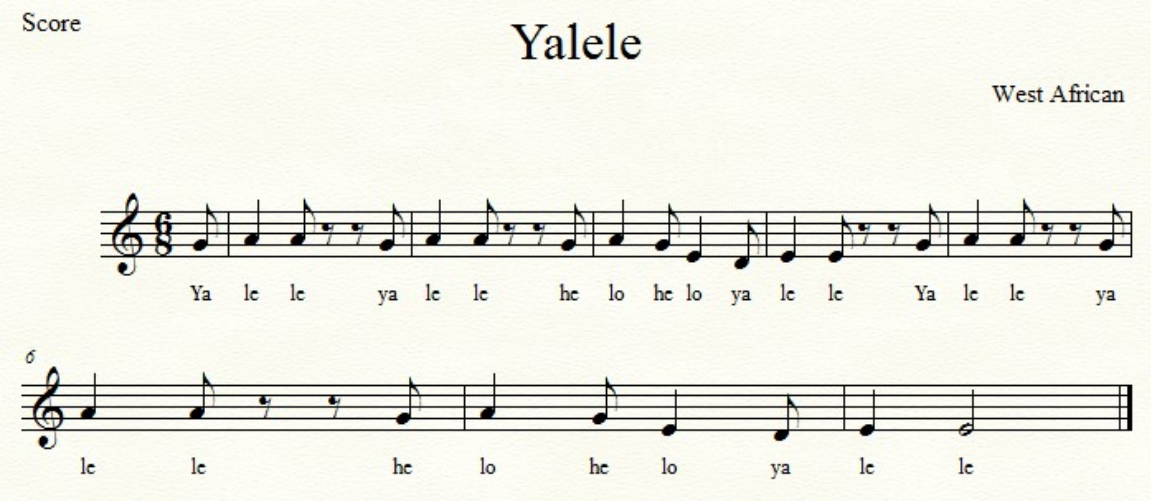


Sample Rhythmic Ensemble:



Appendix G: Songs

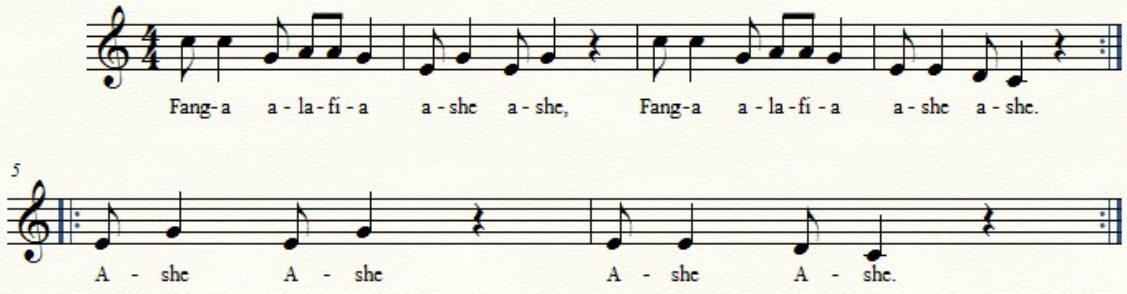




Score

Fanga Alafia

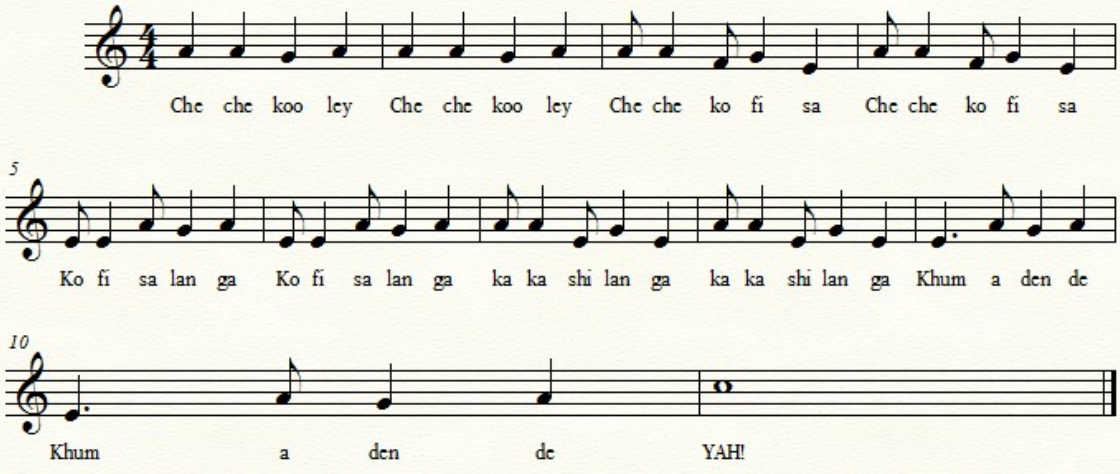
West African

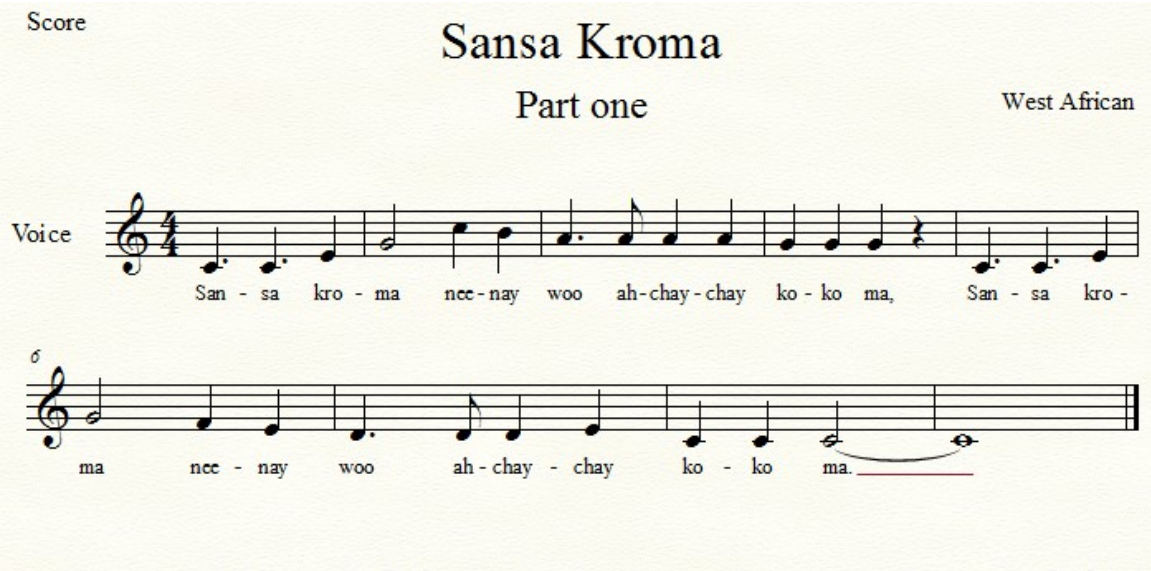


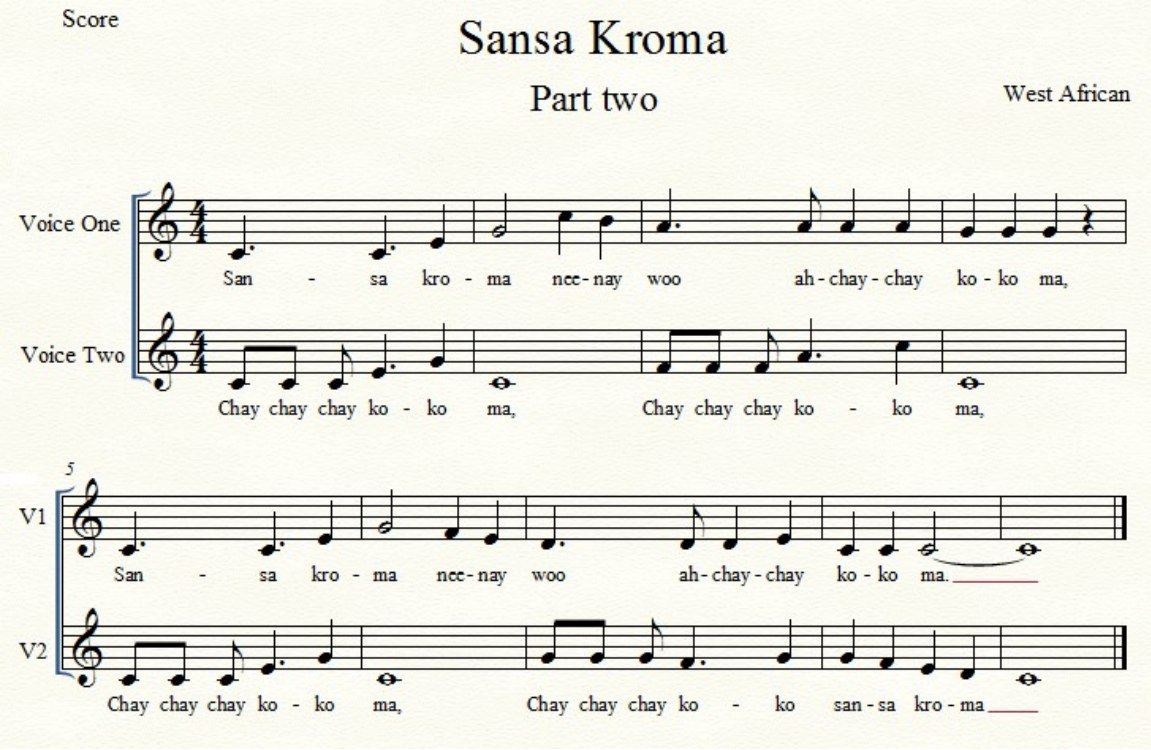
Score

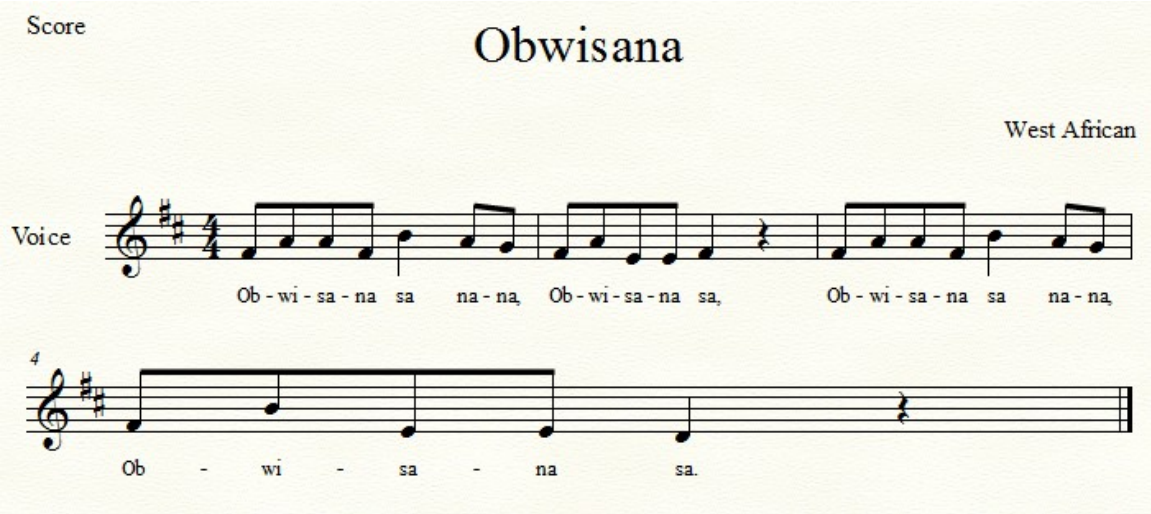
Kye Kye Kule (Che Che Kooley)

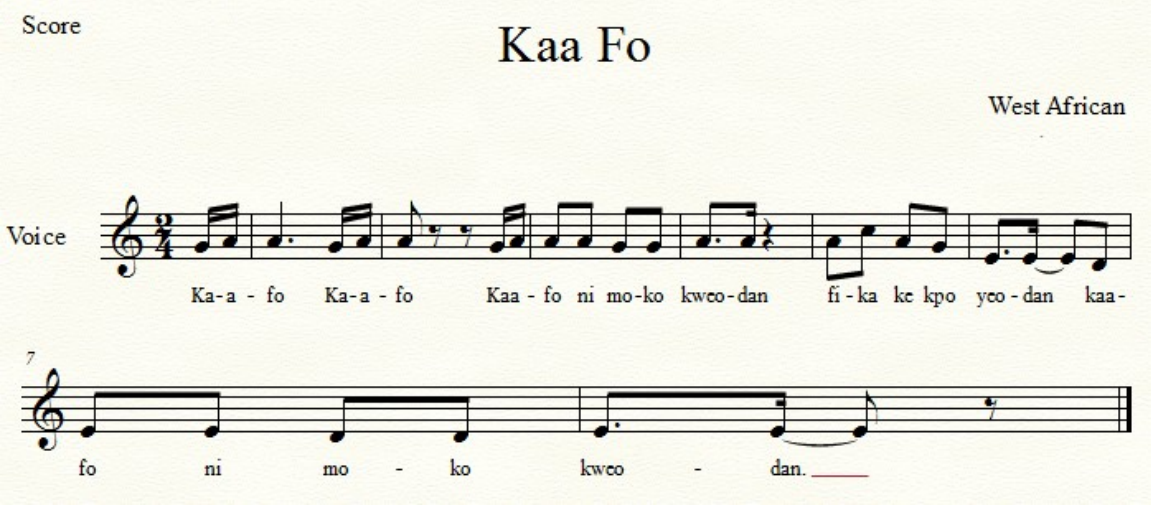
West African




Score
Sansa Kroma
Part one
West African
Voice
San - sa kro - ma nee - nay woo ah - chay - chay ko - ko ma, San - sa kro -
6
ma nee - nay woo ah - chay - chay ko - ko ma.


Score
Sansa Kroma
Part two
West African
Voice One
San - sa kro - ma nee - nay woo ah - chay - chay ko - ko ma,
Voice Two
Chay chay chay ko - ko ma, Chay chay chay ko - ko ma,
5
V1
San - sa kro - ma nee - nay woo ah - chay - chay ko - ko ma.
V2
Chay chay chay ko - ko ma, Chay chay chay ko - ko san - sa kro - ma


Score
Obwisana
West African
Voice
Ob - wi - sa - na sa na - na, Ob - wi - sa - na sa, Ob - wi - sa - na sa na - na,
4
Ob - wi - sa - na sa.


Score
Kaa Fo
West African
Voice
Ka-a - fo Ka-a - fo Kaa - fo ni mo-ko kweo-dan fi - ka ke kpo yeo - dan kaa-
7
fo ni mo - ko kweo - dan.

Appendix H: Certification of Ethical Acceptability

CERTIFICATION OF ETHICAL ACCEPTABILITY FOR RESEARCH INVOLVING HUMAN SUBJECTS

Name of Applicant: Grace-Ann Hunte

Department: Faculty of Fine Arts \ Creative Arts Therapies

Agency: N/A

Title of Project: A Music Therapy Drumming Intervention in Support of Children with Dyslexia

Certification Number: 30003223

Valid From: July 11, 2014 to: July 10, 2015

The members of the University Human Research Ethics Committee have examined the application for a grant to support the above-named project, and consider the experimental procedures, as outlined by the applicant, to be acceptable on ethical grounds for research involving human subjects.

Dr. James Pfaus, Chair, University Human Research Ethics Committee