

# **Disseminating Knowledge with Music**

A Thesis submitted to the College of Graduate Studies and Research  
In Partial Fulfillment of the Requirement for the Degree of Master of Education  
In the Department of Educational Psychology and Special Education  
University of Saskatchewan  
Saskatoon

By

Jacqueline Jennifer Pollard

## **PERMISSION TO USE**

In presenting this thesis in partial fulfillment of the requirements for a graduate degree from the University of Saskatchewan, I agree that the libraries of this university may make it freely available for inspection. I further agree that permission for copying of this thesis in any manner, in whole or in part, for scholarly purposes may be granted by the professor or professors who supervised my thesis work, or in their absence, by the head of the department or the dean of the college in which my thesis work was done. It is understood that any copying or publication or use of this thesis or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the University of Saskatchewan in any scholarly use which may be made of any material in my thesis.

Request for permission to copy or to make other use of material in this thesis in whole or in part should be addressed to:

Head of the Department of Educational Psychology and Special Education

University of Saskatchewan, Education Building

Room 3104, 28 Campus Drive

Saskatoon, Saskatchewan, S7N 5X1

## **ABSTRACT**

The Delphi method was used to investigate the use of music in knowledge dissemination by systematically accessing and synthesizing the knowledge of researchers and musicians who have used this particular artistic method in research. The expert panel included six researchers (three also identifying as musicians) and 1 musician/composer who had used music as a tool to disseminate research findings in formal research. Two rounds of online Delphi questionnaires were used to generate data, which were analyzed inductively. Findings included eight categories of consensus reached amongst participants: (a) music can reach a larger audience than traditional research dissemination tools, (b) music can convey a variety of research topics, sometimes multiple concepts all at once, by telling a story, (c) music evokes emotional, visceral, and embodied responses and creates connections between individuals through a shared experience, (d) music provides a way to express knowledge or ideas either differently or, in some circumstances, better than language because music can create interest, is emotional, inspiring, and universal to all humans, (e) music is valid and acceptable to use for all research projects and there is no singular procedure for using music to disseminate research findings, (f) using music for the purposes of knowledge dissemination is complex, time-consuming, and requires expertise, (g) using music to disseminate knowledge is acceptable to use as a standalone or supporting methodology, however regardless of the methodology the intent of the research is fundamental, and (h) the current research ethical standards used for music in research are sufficient, however no ethical procedures for knowledge translation research exists. The current study's findings extend knowledge and understanding about the use of music in research dissemination, and have implications for future research and research practice.

## ACKNOWLEDGEMENTS

Writing this thesis has definitely been a journey! I like to think of it like riding a rollercoaster. The process has been comprised of many ups and downs, feeling like you have no control, moments of anticipation, fear, excitement, tears, and laughter. Completing a Master's thesis is certainly a challenge, but I would not have been able to accomplish it without the support of many individuals.

I would like to express my deepest gratitude to my supervisor, Jennifer Nicol, for her continued support, guidance, and positive reinforcement throughout this process. Without you this thesis could not have been possible. Thank-you for seeing my potential. I would also like to thank my committee member, Stephanie Martin, for your knowledge, feedback, and support. Your challenging feedback ultimately lead to a thesis which I am proud to call my own. Thank-you to my external examiner, Jennifer Lang, for your knowledge, expertise, and recommendations.

I'd like to express my gratitude to the seven participants who volunteered their time to participate in this study. I am so grateful that you took the time out of your busy lives to reply to my many emails and responding to the Delphi rounds. Your knowledge and expertise made this research possible and I hope that this research will be useful to you and anyone hoping to use music to disseminate their research.

Of course, I can't forget about The Cohort. You are a great group of friends and I am so thankful I had the opportunity to learn and grow with you. I'm forever proud of each and everyone one of you. Thank-you for being amazing friends.

Most importantly, I would like to thank my parents, Calvin and Vivienne Pollard for supporting me throughout my academic career. You two have been my number one fans since the day I was born and I am proud to call myself your daughter. You've shown me so much love and support throughout the years and you've always believed I could do anything I set out to accomplish. Mom and Dad, you are true inspirations and I love you from the bottom of my heart.

## TABLE OF CONTENTS

PERMISSION TO USE.....	i
ABSTRACT.....	ii
ACKNOWLEDGEMENTS.....	iii
TABLE OF CONTENTS.....	iv
<b>CHAPTER 1: INTRODUCTION.....</b>	<b>1</b>
The Present Study .....	2
Organization of Thesis .....	4
Important Terms.....	5
<b>CHAPTER 2: LITERATURE REVIEW .....</b>	<b>7</b>
The Arts in Research.....	7
Background .....	7
Challenges in Art Research.....	9
Knowledge Production and Knowledge Dissemination .....	10
Knowledge Production.....	10
Photography .....	11
Drawing.....	12
Poetry .....	13
Knowledge Dissemination .....	14
Theatre .....	16
Photography .....	18
Poetry .....	19
Dance .....	20
Multiple artistic forms.....	21
Music.....	22
Examples of Music Used for the Purpose of Research Dissemination.....	27
Summary and Concluding Comments .....	30
<b>CHAPTER 3: METHODOLOGY .....</b>	<b>31</b>
Qualitative Research.....	31
Conceptual Framework.....	31
The Delphi Method.....	32
Background.....	32
Current Understanding.....	33

Purpose.....	34
Strengths and Weaknesses .....	34
Rationale for Using the Delphi Method.....	35
Procedures.....	36
Selecting and Recruiting Participants .....	36
Data Collection and Analysis.....	38
Round One .....	38
Round Two.....	39
Data Analysis .....	40
Evaluation Criteria for Trustworthiness .....	41
Ethical Considerations .....	43
<b>CHAPTER 4: RESULTS .....</b>	<b>44</b>
Participants: The Delphi Expert Panel.....	44
Consensus Statement of Findings .....	44
Music can reach a Larger Audience than Traditional Research Methods	45
Music can convey a Variety of Research Topics, sometimes Multiple	
Concepts all at once, which can tell a Story .....	45
Music evokes Emotional, Visceral, and Embodied Responses and	
Connections through a Shared Experience .....	46
Music provides a way to express knowledge or ideas either differently or,	
in some circumstances, better than language because music can create	
interest, is emotional, inspiring, and universal to all humans.....	48
Music is Valid and Acceptable to use for all Research Projects with no	
Singular Procedure existing .....	50
Music in Research is Complex, Time-Consuming, and Requires Expertise	
.....	51
Music is acceptable to use as a Standalone Methodology or Supporting	
Methodology, yet regardless of the Methodology the Intent of the	
Research is Fundamental .....	53
Current Ethical Guidelines are Sufficient, however the lack of Ethical	
Procedures for Knowledge Translation Research is Concerning .....	55
Looking Back to the Research Questions .....	56
What Characteristics of Music make it an Effective Tool for	
Disseminating Knowledge? .....	56
When is it Appropriate to Use Music to Disseminate Knowledge? .....	57

How do Researchers and Musicians go about using Music in Research for the purpose of Knowledge Dissemination? .....	57
<b>CHAPTER FIVE: DISCUSSION.....</b>	<b>59</b>
Summary of Findings.....	59
Integration of Results with Existing Literature.....	60
Findings Confirmed in the Literature .....	60
Research for a larger audience .....	60
Create connections between individuals through a shared experience .....	60
Music provides a way to express knowledge or ideas differently by creating interest, being inspiring, and accessing human emotions	61
Music in research is complex, time-consuming and requires expertise .....	63
Intent of the research is fundamental .....	64
Unique features of music .....	64
Findings Missing in the Literature .....	69
Strengths of Current Study .....	73
Limitations of Current Study and the Delphi Method .....	74
Implications for Future Research.....	75
Implications for Research Practice .....	77
Conclusion .....	77
<b>REFERENCES.....</b>	<b>79</b>

## **List of Appendices**

Appendix A: Participant Invitation.....	92
Appendix B: Participant Consent Form.....	93
Appendix C: Demographic Form .....	96
Appendix D: Round One Delphi Questionnaire .....	97
Appendix E: Round Two Delphi Questionnaire.....	98
Appendix F: Debriefing Letter and Thank-you .....	100

## List of Tables

### Table

Table 3.1: Researcher Data Analysis .....	40
---	----

## CHAPTER 1: INTRODUCTION

The arts, especially music, have and will always have a profound significance in my life. Throughout childhood and into adolescence, drawing and painting became my favorite way to play. In early childhood, art was a vehicle for learning and a first attempt at self-expression and creativity. When the mediums of paint, markers, and crayons were in my hands, I could do whatever I choose with them. No one could tell me I was using too much glitter or not enough pink. Art was one thing that I had control of in my small world.

Art was also a way of coming to know myself and the world around me, while also being an outlet for others to understand my emotions and thoughts. For example, when my grandmother passed away I drew a picture of my grandmother and me together. I now realize that drawing this picture was a way of working through my feelings and saying goodbye.

My make believe play was also heavily influenced by the arts, and in particular by music. My brother, sister, and I would pretend we were a famous rock band and I would personally write the lyrics to our songs. Reminiscing about those days still brings me tremendous joy, just as it did when I was a child. As I grew older I became involved in school theatre, art club, choir, and symphonic concert band. I dreamed of one day performing for a large audience. My childhood dream carried into adolescence where I continued to foster my passion for music through my formal training as a musician. At age twelve I began to play the flute and I invested many years as a musician, competing across Canada with the school concert bands. One of the greatest moments of my life, which brought me tremendous pride, was travelling to Nationals MusicFest Canada in Ottawa, Ontario and performing with the Lloydminster Comprehensive Symphonic Band. I still recall the joy my colleagues and I felt when our conductor revealed we had been accepted to play at the National level. For me, performing with the symphonic band created a sense of community, unity, and allowed for a shared experience between me and my peers. We were all working towards a common goal and performing together meant creating something beyond what a single individual was capable. Performing with my peers meant commitment, trust, and teamwork.

In my experience, performing for an audience creates a whirlwind of nerves, thrills, and exhilarations that are unique and only matched in select situations. For me, music is unique as it is not just something you hear, but something you feel. Music has the potential to captivate and elevate individuals to a new level of consciousness and understanding. Music serves as a

medium to express emotions, communicate messages, and create meaning. American poet, Henry Wadsworth Longfellow said that music is the universal language of mankind, while Victor Hugo stated that music expresses that which cannot be put into words and that which cannot remain silent. I believe these statements to be truth. There have been times in my music career when I was brought to tears. Not just because of the sheer beauty of the music, but because I believed I truly understood what the composer was feeling and attempting to express. I also believe that my peers felt that same connection to the music. These times of connectedness and shared experiences are what makes music such a powerful form of expression. Music's unique ability to create meaning, share messages, evoke emotions, and connect to others serves as an outlet to create deep connection to an experience and people. Music is a way of coming to know ourselves and the world around us. Serendipitously, this thesis research idea was introduced by my research supervisor but connected deeply with my personal interest in the arts and a passion for research. I have always been drawn to innovative research. Legitimizing the arts as a way to conduct research is a field of study that is fascinating and one that I am excited and honoured to be a part of.

### **The Present Study**

This study was designed to investigate whether music is a useful tool to disseminate research findings. My goal was to expand on the current literature and knowledge on whether music is a credible tool for translating research to and beyond academia. Over the past decade, arts research has developed significantly and is progressively becoming recognized as a credible and legitimate way to conduct research and represent knowledge in many academic disciplines (McCaw, 2013), including health sciences, social sciences, the humanities, and education (Blignault et al., 2010; Boydell, Gladstone, Volpe, Allemang, & Stasiulis, 2012; McNiff, 2011). Artistic mediums, such as music, poetry, theatre, dance, and visual art are being used to explore and process research topics (Leavy, 2009). The arts are argued to be a powerful tool for increasing insight and understanding and enriching and informing the research process (Leavy, 2009). The arts provide an opportunity to explore aspects of life that can be difficult to describe, such as subjective experiences and strong emotions. Some researchers argue that the arts can give voice to populations marginalized as a result of their race, gender, sexuality, cultural background, or disability (Leavy, 2009; Estrella & Forinash, 2007). Panhofer, Payne, Meekums, and Parke (2011) maintain that using the arts can access ways of knowing that are not accessible

through verbal or written means. Piercy and Benson (2005) describe how the arts can be moving, compelling, and provoke strong emotions, which can bring research findings to life, while Leavy (2009) suggests that the arts “grab people's attention in powerful ways” (p. 12). The arts can be highly effective in engaging a wide range of people in research and in promoting dialogue with non-academic audiences (Leavy, 2009) and can increase access to research findings and uncover new questions and conversations about the research not typically considered by scholars (Chilton, 2013). The arts are open to multiple interpretations, which allows for multiple meanings from one phenomenon (Leavy, 2009).

Although the arts and sciences are intrinsically similar as both are grounded in exploration, revelation, representation and work together to advance human understanding, they are typically viewed as two separate worlds (Leavy, 2009). However, using the arts in disseminating knowledge is a collaborative effort that can bring together the arts and sciences, minimize the boundaries that often exist between these two worlds, as well as provide a chance for meaningful dialogue and partnership (Boydell, 2011). Nevertheless, arts in the research process is still a rather novel topic, and given its exploration in a variety of disciplines, the current literature involves a wide range of studies that use varied terminology, concepts, methods, and methodologies. To add to the complicated state of arts research, there appears to be no agreement about what qualifies a study as arts research. However, McCaw (2013) reviewed the literature and concluded that as long as there is some form of art used as a medium within the research process, the research was classified as arts research.

As identified by McCaw (2013) there are two main purposes for arts in the research process: knowledge production and knowledge dissemination. Knowledge production refers to using artistic methods to collect or generate data in order to learn about a phenomena or experience (Fraser & Sayah, 2011). Knowledge dissemination denotes activities typically occurring at the end of the research process (following data analysis and generation of findings), which aim to make findings accessible and useable (CIHR, 2014). The arts in research have traditionally focused on using it as a tool for knowledge production (Daykin, 2004); however, in recent years it has also been used as a means for disseminating knowledge (Woo, 2008). An analysis of the current literature suggests that most studies use arts in research to generate or collect data as a way to learn about a particular phenomenon or experience; the arts are used less frequently to disseminate findings (Fraser & Sayah, 2011).

Several art mediums have been used in disseminating knowledge, although some are more prominent than others. For example, theatre is an art form often identified as an effective artistic medium to disseminate knowledge (Blignault et al., 2010; Rossiter et al., 2008). Other art forms such as photographs (Lapum et al. 2011), poetry (Langer & Furman, 2004), and dance (Boydell, 2011) have also been used as a tool for disseminating knowledge. Music, on the other hand, has been used infrequently in research (Daykin, 2004), which suggests a gap in the literature. The potential value of music is evident in its educational and therapeutic strengths. For example, music therapy has been well-documented and proven to facilitate healing in patients (Thaut, 2005). Health care professionals and music therapists have long recognized the value of music in (a) assisting people to adjust to change and (b) being a tool for healing that addresses individuals' physical, emotional, cognitive, communication and psychosocial needs (Baker, Kennelley, & Tamplin, 2005). Although the suitability of music for the purpose of knowledge dissemination and research has been demonstrated by Colleen Dell (2014, 2011) Laura Beer (2013), George Gadanidis and Marcelo Borba (2013), Cynthia Vander Kooij (2009), and Mary Rykov (2008), it is evident within the literature that music is one of the least used art forms for knowledge dissemination. Since music is a powerful tool for expression (Daykin, 2004), using music in knowledge dissemination seems a promising way to generate, explore, and interpret diverse meanings and perspectives. Thus, the present study was designed to address this gap in the literature by systematically accessing and synthesizing the knowledge of researchers and musicians who have used music in research. This research is significant because it addresses the lack of research regarding the use of music to disseminate research. To the best of our knowledge, this research is the first study to bring together and solidify the knowledge of researchers and musicians who have used music as a means to disseminate research findings. Specifically, the study's purpose was to investigate the use of music in research dissemination using a Delphi research design. The following questions guided the study: (a) what characteristics of music make it an effective tool for disseminating knowledge? (b) when is it appropriate to use music to disseminate knowledge? (c) how do researchers and musicians go about using music in research for the purpose of knowledge dissemination?

### **Organization of Thesis**

The thesis is organized into five chapters. The first chapter provides an introduction. The next four chapters include a review of relevant literature (Chapter 2); an explanation of the

research methodology, including recruitment and selection of participants, description of the Delphi method and the Delphi rounds, and ethical considerations (Chapter 3); a presentation of the research findings, including consensus statement and direct quotes from participants (Chapter 4); and a discussion of the findings, including unique features of music which make it useful for research dissemination, difficulties in using music to dissemination research, strengths and limitations of the current research, and implications for future research (Chapter 5).

### **Important Terms**

The following key terms appear throughout the document and are defined as follows:

**Arts:** “The various branches of creative activity such as painting, music, literature, and dance” ([Oxford English Dictionary Online, 2016](#)).

**Art Based Research:** “The systematic use of the artistic process, the actual making of artistic expressions in all of the different forms of the arts, as a primary way of understanding and examining experience by both researchers and the people that they involve in their studies” (McNiff, 2007 p.1). Art based researchers use visuals, performances, and literature to systematically generate new, ideas through artistic discovery (McNiff, 1998) and transcend the limits of language and call forth what cannot be articulated (Eisner, 1997).

**Music:** “Vocal or instrumental sounds (or both) combined in such a way as to produce beauty of form, harmony, and expression of emotion” ([Oxford English Dictionary Online, 2016](#))

**Delphi Method:** A structured repetitious group communication process in which opinions and insight on a particular topic are collected and synthesized using a series of questionnaires interspersed with feedback (Skulmoski, Hartman, & Krahn, 2007).

**Knowledge Production:** Artistic methods that are used to generate or collect data to learn about phenomena or experience (Fraser & Sayah, 2011, p. 127).

**Knowledge Translation:** “A dynamic and iterative process that includes syntheses, dissemination, exchange, and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system” (CIHR, 2014, para. 1).

**Knowledge Dissemination:** Activities typically occurring at the end of the research process (following data analysis and generation of findings), which aim to make findings accessible and useable (CIHR, 2014).

**Passive Dissemination:** A form of communication, such as publication in an academic journal.

**Active Dissemination:** “Identifying the appropriate audience and tailoring the message and medium to the audience” (CIHR, 2014, para. 3; Walter, Nutley, & Davies, 2003). Often involves activities such as developing summaries for stakeholders, offering educational sessions for knowledge users, engaging knowledge users in developing dissemination activities, creating tools and engaging the media (CIHR, 2014).

## **CHAPTER 2: LITERATURE REVIEW**

The following chapter begins with an introduction on the beauty and power of the arts, followed by how the arts have been used in the fields of education, health, and social sciences and what makes arts research an innovative area of research across all disciplines. The literature reviewed is organized to distinguish between knowledge production (in the areas of photography, drawings, and poetry) and knowledge dissemination (in the areas of theatre, photography, dance, and music). The chapter also includes information that highlights the unique characteristics of music that make it a worthy topic of investigation for research dissemination. The chapter concludes with a chapter summary and statement of the research questions.

### **The Arts in Research**

The arts have been valued in most societies for their powerful means of expression and communication of thoughts and feelings, for their ability to allow others to reflect on personal experiences, and for their therapeutic worth (Fraser & Sayah, 2011). The arts are considered normal, natural, and necessary for all humans and all humans are believed to be biologically predisposed to art (Dissanayake, 1992). Although, the value of the arts to humans and society is thought to be universal, a concrete definition of what constitutes as art has been debated by many people from various backgrounds, cultures, and academic disciplines. However, in this study the term arts refer to “the various branches of creative activity such as painting, music, literature, and dance” (Oxford English Dictionary Online, 2016).

### **Background**

For centuries music has been recognized for its therapeutic effectiveness in healing the body and mind and for treatment of physical or mental illness (Batt-Rawden, 2010). More recently, music and other artistic forms such as theater, dance, photography, and poetry have also been increasingly used to generate data, represent data, and disseminate findings (Woo, 2008). The arts offer alternative ways for producing and communicating research findings (Keen & Todres, 2007) while creating new ways of thinking about traditional research practices (Leavy, 2009). What is unique about the arts in research is that they can provide researchers and audiences with new insights, knowledge, practices about a given topic through the various senses, emotions, and ambiguities (Woo, 2008). Music in particular, allows an audience to

become aware of their emotions, while at the same time serving as a means to release them (Baker & Wigram, 2005). According to Boydell et al. (2012), the arts inform and enrich the research process by encouraging individuals to connect with research on a personal and emotional level. The arts in research have the ability to improve social communication and self-organization and to increase cognitive functioning and awareness (Baker & Wigram, 2005). The arts have also been presented as a way of exploring sensitive aspects of life that are not easily articulated or expressed in words, such as subjective experiences and strong emotions (Fraser & Sayah, 2011; Leavy, 2009). For instance, poetry has been utilized for many years to express intimate feelings of love, anger, grief, and pride (Fraser & Sayah, 2011). Additionally, film and theater have been used to disseminate insightful and evocative messages regarding intimate topics of illness such as cancer and the social phenomenon of bullying (Fraser & Sayah, 2011). The arts have also given a voice to marginalized populations (Ledger & Edwards, 2011), such as Indigenous women (Dell et al., 2014). The arts can bring research to life and grab people's attention in a powerful way by telling a compelling, heart wrenching, and meaningful story that people might be uncomfortable communicating. The arts are believed to be highly effective in engaging a wide range of people in research and in promoting dialogue with non-academic audiences (Leavy, 2009).

Over the decade arts research has evolved and been adopted into many disciplines across the academy (McCaw, 2013). The field of education was the first to embrace arts research, however in recent years the use of arts has become increasingly popular in health, social sciences, and humanities. The academic environment became more responsive to new methods of investigation thanks to scholars like Rudolf Arnheim and Susanne Langer who established the cognitive and intellectual aspects of art (McNiff, 2007). Susanne Langer believed that symbolism was how the human mind transformed the need to express oneself and argued that symbolism, as expressed through the arts, had the ability to capture unique knowledge about human feelings whereas Rudolf Arnheim suggested that the arts are an effective means to carry out thinking and act as a mode of understanding (Carter, 2003).

In the 1970s, educational researchers began using the practices of artists and arts critics to conduct educational research (e.g., Eisner, 1976; Greene, 1975; Grumet, 1978; Vallance, 1977). With the introduction of aesthetics theory, arts-based forms of educational inquiry were formulated, and by the 1990s had grown to include narrative writing, autobiography, dance and

movement, readers theatre, multi-media, hypertext, visual arts, photography, music, poetry, and creative non-fiction (Sinner, Leggo, Irwin, Gouzouasis, & Grauer, 2006). Developing from the work of Canadian and American scholars such as Gary Knowles, Celeste Snowber, Cynthia Chambers, John Dewey, Thomas Barone, Rishma Dunlop, Elliot Eisner, Ardra Cole, Susan Finley, Maxine Greene, Claudia Mitchell, Lorri Neilsen, Joe Norris, Jane Piirto, and Sandra Weber, arts research continues to grow in the field of education (Sinner et al., 2006).

Arts researchers in education argue that the creative arts are a mode of representation and inquiry that provide perspectives for making decisions regarding policy, pedagogical theory, and practice (Sinner et al., 2006). Similarly, arts research in the area of health is emerging as a new approach for social inquiry and a beneficial direction for innovation in qualitative research (Boydell, 2011; Kontos & Naglie, 2007). The integration of the arts into health research occurred when qualitative research broadened and researchers were impelled to find and use methods of data collection that would produce important understandings and insights about specific concepts or phenomena such as the lived experiences of hospital patients undergoing chemotherapy (Oliffe & Bottorff, 2007). Health researchers began to use a variety of artistic forms either alone or in combination with other traditional methods of data collection (e.g., interviews, focus groups, Harper, 2002). Although, Fraser and Sayah (2011) suggested that many approaches to using the arts in health research remain immature, this new field is continuously evolving into a legitimate and respected area of research.

### **Challenges in Art Research**

The uniqueness and complexity of the arts can be identified in the state and structure of the literature. That is, multiple definitions, concepts, methods, and methodologies are being used, which makes it difficult to pin-point exactly what is art research. One example of the challenge is the term *arts research*, which is also referred to as arts based research, arts informed research, arts based inquiry, arts related research, and arts based educational research.

Another unique and complex factor in the art literature is the list of diverse artistic methods used within arts research and the tendency for every academic discipline to coin its own terminology. For example, there are the standard art methods, such as drawing, photography, poetry, and theatre, however there are other artistic methods less commonly known that originate from various academic disciplines (e.g., photovoice, photo elicitation, ethnodrama, altered books, and collage portraits). Furthermore, many researchers combine classical research

methods such as interviews, observation, and focus groups with an arts method, which increases the complexity of the research study and what is considered arts research. Importantly, there has been no agreement in the literature about what qualifies a study as arts research (McCaw, 2013). However, I combined McNiff's (2007, 1998) and Eisner's (1997) definition of art based research and for the purposes of the current study, defined art based research as a systematic artistic process, such as the actual making of artistic expressions, in all of the different forms of the arts (e.g., music, poetry, photography, creative writing, theatre, dance). Art based research is a primary way of understanding and examining experience by both researchers and the people that they involve in their studies. Art based researchers use visuals, performances, and literature to systematically generate new ideas through artistic discovery (McNiff, 1998) and transcend the limits of language and call forth what cannot be articulated (Eisner, 1997). The aim of art based research is to foster insight and understanding, and to reveal 'what someone can feel' about some aspect of life (Barone & Eisner, 2012) by both researchers and audience (McNiff, 2007). These approaches provide ways of communicating that move people towards new ways of understanding and knowing.

### **Knowledge Production and Knowledge Dissemination**

A review of the literature led McCaw (2013) to identify two main purposes for which the arts are used in research: knowledge production and knowledge dissemination. Fraser and Sayah's (2011) arts-based methods health review suggested that arts are most commonly used as a tool for knowledge production. Here, I review the most popular artistic mediums used for the purpose of knowledge production and knowledge dissemination to address the characteristics of the arts which make it useful in research, but also to report on the lack of research existing which uses music as a means for knowledge production and dissemination.

#### **Knowledge Production**

Knowledge production refers to artistic methods that are used to collect or generate data to learn about a phenomena or experience. This term is used interchangeably with other terms such as knowledge generation and knowledge creation. Studies that use the arts for knowledge production commonly use the arts as a tool for generating data. The most frequently used art forms in these studies are the visual arts, such as photographs and drawing, although poetry is another popular data generating technique (Fraser & Sayah, 2011).

**Photography.** Fraser and Sayah (2011) searched the literature and determine that the most widely used art genre for the purposes of knowledge production was photography. Photography, including photovoice and photo elicitation, is commonly used in health care research and has been used as a way to create and generate data by both the researcher and the participants. Photography as a means for knowledge production has acted to uncover perceptions and experiences of illness and has been used in interviews with patients as a means to elicit thoughts and feelings regarding a specific phenomenon (Fraser & Sayah, 2011). For example, Frith and Harcourt (2007) asked women participants who were being treated with chemotherapy to take photographs that captured their experiences during the course of their treatment. The women were then interviewed after completing treatment and discussed the photographs that they had taken as well as reflected on the photo-taking process. The authors concluded that the photographs captured intimate, private, and everyday accounts of the experience, captured the experience of illness over time, and allowed the participants the control to represent their experiences and images of themselves.

Photographs were used in Bukowski and Buetow (2010) study to capture the experiences of how women without homes see their lives and what needs to be done to improve their health and ensure their survival. Then the women were interviewed to discuss the content in the photographs. The photographs captured threats to women's health, addiction, protection, and support. The photos also captured a new image of homelessness, which socially deconstructed the idea that homelessness is a predominantly male situation (Bukowski & Buetow, 2010). Similarly, Radley and Taylor (2003) invited hospital patients to take photographs of their ward, its spaces and objects, and then interviewed them about these images in an attempt to discover which aspects of the wards physical setting played a role in patients' recovery. The photographs allowed the patients the opportunity to identify and capture aspects of the setting that they found salient. Patients were interviewed about what the image showed, their response to the images in the photographs, and if people were present in the photos, what would they be doing. The photographs "did not just represent objects and places, but sites, sources, and channels of treatment and care" (Radley & Taylor, 2003, p. 92).

In order to explore the everyday issues, challenges, struggles, and needs of elderly women following hospitalization, another team of researchers had four elderly women take photographs of their everyday lives (LeClerc, Wells, Craig, & Wilson, 2002). The photographs

were then used as a tool to deepen and enrich the post-interviews with the women participants. The overall theme that emerged was that the hospital discharge plans failed to reflect the complexity of the post-hospitalization experience by focusing primarily on very basic physical and medically related needs rather than on the reality of the women's recovery (LeClerc et al., 2002).

Photographs were also used in Oliffe, Bottorff, Kelly, and Halpin's (2007) study to capture men's experiences of smoking and fatherhood. Photographs were taken by the male participants that focused specifically on their personal experiences regarding smoking in fatherhood. Following this, the researchers interviewed the participants and discussed their photographs in order to contextualize the accounts and add possible explanations for each photograph.

Orr and Phoenix (2015) used photographs to gain insight into the embodied experiences of older adults with aging physically active bodies. Thirty-two adults over the age of sixty were photographed by research assistants while engaged in various physical activities, including Zumba, tennis, swimming, cycling, yoga, and golf. Interviews were also conducted which allowed the participants to give feedback about their experience of physical activity in the photographs. The photographs were able to provide rich and detailed accounts of what doing the activity was like for each participant.

**Drawing.** Drawing is another popular medium to generate data by both researchers and participants in health care. Drawings for the purpose of knowledge production have been used as a source of information about health and illness care and considered an effective tool to help participants identify feelings and desires that may not be easily expressed through words (Fraser & Sayah, 2011). For instance, Pelander, Lehtonen, and Leino-Kilpi (2007) had forty hospitalized children create drawings of their ideal hospital. Major themes that emerged was a large building, with lots of windows, and a large courtyard. The drawings also represented entertainment with toys, books, cartoons, a playground and TV set. The people who appeared in the ideal hospital drawings included patients, parents, and nurses. The drawings gather information about how children perceive the quality of care that they receive in hospitals (Pelander et al., 2007).

Drawings were also used by Guillemin (2004) who asked women attending menopause clinics in Australia to draw their understanding and lived experiences of the stages of

menopause. Analysis of the drawings uncovered three themes: life transition, menopause as a lived experience, and menopause as loss and grief, which revealed many diverse ways in which women understood and experienced menopause (Guillemin, 2004).

Guillemin (2004) also used drawings as a way to explore how thirty-two mid-aged women understood and experienced heart disease. The women were asked to draw how they visualized their heart condition. Afterwards, the women were asked to describe their image, including the content, chosen colours, spatial organization, and composition of the drawings. Three main themes emerged: the heart as the centre (or the heart of the matter), the heart in the lived body, and heart disease as a social illness. These drawings were visual products of heart disease and represented a way to produce meaning about what heart disease means for those experiencing the illness (Guillemin, 2004).

Finally, Nowicka-Sauer (2007) had patients diagnosed with lupus construct drawings of their perceptions of the disease lupus. Thirty-eight women with lupus attended a course called *My Life* and were asked to draw their disease and then comment on it. Analysis of the disease pictures uncovered many dimensions of patients' perspectives of living with the disease, especially the psychological hardships that accompany lupus.

**Poetry.** Poetry is another art genre used for the intent of knowledge production although less frequently than photography and drawing. Poetry has been used as a way of knowing, of being, and becoming in the world and as a way to document the human experience (Fraser & Sayah, 2011). For example, Kidd and Tusaie (2004) had nursing students write original poems about their clinical experience in mental health nursing. Specifically, the students were to write a poem that would reflect either a client's voice or their own personal response to mental illness. One common pattern emerged from the poems: disconfirming beliefs. As such, five themes emerged from the text including: fear about personal safety and competence; empathy for the lived experiences of the patients; normalization of mental illness; the student nurses as wounded healer; and metamorphosis. An analysis of the poems aided to expand the instructors' knowledge of the student experience by providing a rich and diverse medium for expression of thoughts, feelings, and knowledge.

Similarly, Furman, Collins, Langer, and Bruce (2006) explored practitioners' use of poetry as a tool for facilitating and understanding the lived experiences of patients suffering from mental illness. The first author, Rich Furman, wrote seven poems representing seven clients that

he had treated with various mental illnesses. Each poem was analyzed by the third author, Carol Langer. The theme that emerged amongst the poems was one of universal experiences between the authors. That is, each poem described the personal and professional growth that a therapist might undergo while treating mentally ill patients. They concluded that each poem's success depends on "whether the poems are able to inspire the readers desire to compare these poems to their own experiences" (Furman et al., 2006, p. 341).

Likewise, Miller and Brockie (2015) investigated the disaster experiences of older adults who were evacuated from their homes in Australia during the 2011-2013 Queensland floods. Ten individuals over the age of sixty-five were interviewed about their experience during the flooding and the evacuation. The first author, Evonne Miller, analysed and synthesized the interviews and wrote five poems that represented the participants' experiences and perceptions of social support during the floods. The poems depended the author's ability to understand and emotionally connect with the lived experiences of the older adults (Miller & Brockie, 2015).

### **Knowledge Dissemination**

There has been a recent shift away from the trend of using the arts for knowledge production to knowledge dissemination. The change comes not because using the arts for knowledge production was not seen as valuable, but because the unearthed information was not being transferred to the appropriate audiences. In other words, a gap existed between the "what we know" (science) and "what we do/what we practice" (actions of end-users, Tetroe, 2007). To try and close the gap between knowledge and action and to ensure that end-users were able to access research findings, an emphasis was put on knowledge dissemination, also referred to as knowledge translation. *Knowledge translation* (also called research transfer, knowledge utilization, knowledge exchange, and research utilization) has been a subject of inquiry since the 1950's when it was conceptualized as a unidirectional and logical flow of information from researchers to policy makers that resulted in specific policy decisions (Jacobson, Butterill, & Goering, 2003). More recently, health researchers in particular, have emphasized the importance of this aspect of research. Knowledge translation (KT) is an activity promoted by the Canadian Institutes of Health Research (CIHR) which defined KT as "a dynamic and iterative process that includes syntheses, dissemination, exchange, and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system" (2014, para. 1). *Dissemination* aids knowledge translation and

refers to a more specific and purposeful approach to sharing research evidence with knowledge users (CIHR, 2014).

Knowledge dissemination refers to activities typically occurring at the end of the research process (following data analysis and generation of findings), which aim to make findings accessible and useable (CIHR, 2014). Research dissemination can be either passive or active. Passive dissemination is defined as a form of communication, such as publication in an academic journal. Active dissemination is described as “identifying the appropriate audience and tailoring the message and medium to the audience” (CIHR, 2014, para. 3; Walter et al., 2003), which often involves activities such as developing summaries for stakeholders, offering educational sessions for knowledge users, engaging knowledge users in developing dissemination activities, creating tools and engaging the media (CIHR, 2014).

Outside of health, education researchers have also embraced a more complex understanding of knowledge dissemination. Hutchinson and Huberman (1994) defined knowledge dissemination as “the transfer of knowledge within and across settings, with the expectation that the knowledge will be "used" conceptually (as learning, enlightenment, or the acquisition of new perspectives or attitudes) or instrumentally (in the form of modified or new practices)” (p. 28). The report also acknowledged the need of different strategies for different purposes.

Traditionally, scholars have relied on peer reviewed articles, book chapters, poster sessions, and conference presentations to disseminate knowledge (Chilton, 2013). However, peer reviewed articles and conference presentations are largely inaccessible by the general public and even by the practitioners who benefits from it (Gadanidis & Borba, 2013; Boydell, 2011). A major concern is that the public does not have access to traditional forms of knowledge dissemination. Thus, we must consider why academic scholars are not doing more to disseminate information to the general public in a more accessible way (Bazely, 2006)? The answer could be that academic cultural expectations, such as peer reviewed articles, book chapters, poster sessions, and conferences presentations, set standards that value one kind of writing or dissemination technique over another (Chilton, 2013). Other’s argue that there is little point in ensuring research flows to a non-academic audience since many are not equipped to digest such research and appropriate support system are lacking (Walter et al., 2003). Furthermore, alternative forms of knowledge dissemination, such as audio or visual works, tend

to face a stringent requirement to be accepted as a true quality research. Since achieving these quality requirements is often difficult, scholars tend to avoid non-traditional forms of knowledge dissemination (Bazely, 2006). Although, alternative forms of knowledge dissemination, such as artistic mediums, have received more criticism than traditional forms of information dissemination, their value is not completely discredited. CIHR has developed several initiatives that offer funding opportunities for the dissemination of research findings through the arts. Furthermore, the new digital technologies being created have a profound effect in changing cultural from a visually-biased culture (e.g., one where we focus on text), to an acoustically-biased one, where performative inquiry becomes increasingly appropriate (Gerofsky, 2010). Thus, it appears important and necessary to continue investigating the innovative topic of art based research dissemination as culture continues to change.

It is important to note that not all disciplines might benefit or find it useful to disseminate knowledge through the arts. However, disciplines such as education, sociology, and health care have used art based research to generate, interpret, and communicate knowledge. Art based research is grounded in the tradition of qualitative social science and by using the arts as a method to disseminate knowledge, disciplinary barriers are lowered and understanding and communication among professionals and the public is improved. By using the arts to disseminate knowledge, researchers give voice to participants (Guillemin, 2004), empowering them and engaging them in the research process (Clarke, Febbraro, Hatzipantelis, & Nelson, 2005). Using the arts to disseminate knowledge provides a unique way of engaging diverse stakeholders on important topics in health care (Parsons & Boydell, 2012), education (Gadanidis & Borba, 2013), and sociology (Dell, 2011). Due to the ambiguity of the arts, which can allow for multiple interpretations the arts also have the unique ability for different stakeholders to learn different things from the same artistic piece, as such a health care professional and a lawyer may understand the same piece of music differently. Furthermore, using the arts to disseminate knowledge can inform clinical practice, policy, and public understanding of important issues (Parsons & Boydell, 2012).

**Theatre.** Theatre has been identified as the most popular form of art research dissemination (Fraser & Sayah, 2011). Theatre has been a more common way to promote and explore ideas about health related topics (Rossiter et al., 2008; Blignault et al., 2010) because it inspires thought, allows for self-reflection, and is personally engaging (Rossiter et al., 2008).

Theatre has been used to explore topics such as schizophrenia, breast cancer, Alzheimer's disease, and genetic testing as well as been used as a means for health professionals to better understand the life experiences of patients with physical and mental illnesses (Blignault et al., 2010). Recently, theatre has been used as a way to increase understanding and reduce stigma in a Macedonia community. Blignault et al., (2010) recognized that those with mentally illnesses are often stigmatized in the Macedonian community so they wanted to create a culturally appropriate means to translate knowledge about mental illness. Since Macedonians have a history of being involved in theatre, Blignault and colleagues developed a theatre-based approach to translate information. Blignault and colleagues utilized the mental health perspectives collected from the patients and the Macedonian community to formulate a script. Blignault et al. (2010) reported that the play provided an opportunity for Macedonians to experience the social issues surrounding mental illness, promote a sense of empathy and inspire community conversations. Theatre connected people on a cognitive and emotional level through the use of verbal and nonverbal communication, while enhancing complex emotional, interpersonal, and psychological dynamics that are difficult to convey in more traditional forms of research dissemination (e.g., scientific articles; Rossiter et al., 2008).

Similarly, Schneider et al. (2014) created a theatrical performance called *Inside Out of Mind* which was intended to raise awareness about dementia and highlight the experience of nursing aids in a hospital dementia unit. The performance was purposefully confusing, noisy and impenetrable in order to mirror the reality of a person with dementia. In addition, the performance allowed the audience a glimpse of the experience of a dementia ward and the physical and emotional stress which often accompanies caring for patients. The initial performances were presented to only health care professionals and an overwhelming majority (93%) rated the performance as good, very good, or excellent. Furthermore, several audience members stated the performance "challenged the status quo: why they generally received so little recognition for the work they do" (Schneider et al., 2014 p. 64). A workshop on the theatrical performance can be found at <https://vimeo.com/32860587>.

Jonas-Simpson et al. (2011) created and evaluate a drama production entitled *I'm Still Here* which intended to help diminish unnecessary suffering experiences by individuals with dementia and their family members. The drama also hoped to reduce the misunderstanding, judgement, and stigma surrounding dementia, including Alzheimer's disease. Research themes

about life with dementia were used to build several story lines showing different persons living with dementia and their relationships with friends, family, and care givers. The performance had positive social response and showed a shift in attitude towards individuals with dementia and their caregivers. Findings reveal the power of drama as a meaningful medium to shift understandings, actions, and images of healthcare professions caring for patients with dementia. Overall, theatre allows for a shift in understanding by both researchers and audiences that is not possible through traditional qualitative research (Jonas-Simpson et al., 2011). A scene from *I'm Still Here* can be found at <https://www.youtube.com/watch?v=hZnLy4RJKfo>.

Likewise, Michalak et al. (2014) evaluated a theatrical performance to reduce stigmatized attitudes surrounding bipolar disorder entitled, *That's Just Crazy Talk*. The play, written and performed by acclaimed actress and mental health educator, Victoria Maxwell, is based on Victoria's lived experiences of bipolar disorder. The play was intended to assess the impact of the performance on people with bipolar disorder and healthcare providers. Results determined that the performance had the potential to change the public's acceptance and understanding of bipolar disorder. Specifically, the audience believed that the performance increased empathy, hope, and their openness to those living with bipolar disorder. In addition, it was agreed that theatre was an appropriate presentation style for disseminating knowledge because of the emotional context of the performance (Michalak et al., 2014).

**Photography.** The second most widely used art medium for knowledge dissemination is photography (Fraser & Sayah, 2011). Photographs provide visual insights and knowledge about human conditions and have been recognized as a useful tool in qualitative research (Lapum et al., 2011; LeClerc et al., 2002). Artistic formats such as photography can be utilized to describe experiences to audiences that they may not have personally encountered (Lapum et al. 2011). These descriptions may include realistic representations that relay diverse perspectives, symbols that hint at underlying meanings or tensions, and abstract impressions that express the atmosphere and mood (Lapum et al. 2011). The literature review completed in the present study revealed that the studies utilizing photography for the purposes of knowledge dissemination were typically used in conjunction with other art forms. For example, Lapum et al. (2011) created an arts exhibit to disseminate their research findings of patients' narratives of open heart surgery and recovery entitled "The 7,024<sup>th</sup> Patient" project. Photographs and poetry were displayed throughout seven sections in a labyrinth-like space, which intended to represent different aspects

of the patient's journey. The intention was for the audience to experience a sense of emotional immediacy and empathy as they traveled through the exhibit. "The 7, 024<sup>th</sup> Patient" project can be found at <https://www.youtube.com/watch?v=pYcSmsRW21g> (Lapum et al., 2011).

Similarly, McIntyre and Cole (2008) gathered data from family and caregivers about their experiences of caring for a loved one with Alzheimer's disease. From this data, a spoken-word performance called *Love Stories* was created. The performance highlighted important themes in Alzheimer's disease, including diagnosis, self-care, the complexities of love, placing a loved one in long-term care, living with long-term care, advocacy, loss of recognition, stigma, and solidarity. Alongside this they launched a public exhibit where they displayed autobiographical images of caregiving and Alzheimer's disease. The researchers aimed to communicate and educate about caregiving and Alzheimer's disease as well for the audience to experience and create meaning from the artistic representation of their research.

**Poetry.** Literary arts have also been used in research as a tool to disseminate knowledge. The most common literary art form is poetry (Fraser & Sayah, 2011). Poetry is a unique means for human expression, which can emerge from lived experience, and can serve as a way of knowing (Hunter, 2002). It has the capacity to evoke emotions for the reader (Poindexter, 2002), and poetry can powerfully document the depth and richness of a phenomenon (Furman, 2004). In research, poetry has mainly been used for the purpose of knowledge production (Furman et al., 2006; Kidd & Tusaie, 2004), however there are a few studies that have used poetry as a tool for knowledge dissemination. For example, Poindexter (2002) conducted qualitative interviews with an HIV infected caregiver regarding the participant's experience with HIV stigma and then derived poems from the interview transcripts to portray the experiences, beliefs, and emotions of her participants. Through this process she successfully portrayed the essence of her interviews that enabled readers to experience a deep sense of resonance and empathy.

Similarly, Langer and Furman (2004) explored the experience of a Native American woman coming to terms with her bi-racial identity and issues related to assimilation through the use of poetry. Working from qualitative interview transcripts, the researchers constructed a poem that utilized the participant's exact words. Then two interpretive poems were created by the researchers as an attempt to capture the essence of the subject's experience. Through poetry, they were able to deeply capture the lived experience of the participant.

Lastly, Furman (2004) created nineteen poems to document and translate the social development realities in Latin America. Furman crafted poetry based on his observations and field notes while travelling, working, and conducting research in Mexico and Latin America. The poetry represents the voices of the old, the young, prostitutes, and the poor. The poetry was intended to be produced for social development practitioners as a way for them to develop increased insight, empathy, and compassion.

**Dance.** There has also been research documenting the process of using dance as a tool to disseminate research findings. For example, Boydell (2011) used dance as a way to raise awareness about early psychosis. The dance performance, *Hearing Voices*, was intended to communicating research findings to the general public, educators, service providers, policy makers, families, and patients. Data were generated through observation and interviews with young individuals with psychosis and other significant people in their lives (including parents, friends, general practitioners, teachers, psychiatrists, and case managers). Three dancers – Carl Bagley, Mary Beth Cancienne, and Siona Jackson – worked closely to choreograph movements that closely represented the words of the research participants (Boydell, 2011). Emergent themes presented throughout the dance performance include complexity and connectedness of family, school, community, and treatment system, the illness experience in the pathway to mental health care, and the difficulties detecting psychosis by professionals and social supports. The dance performance created an opportunity for people to become aware of psychosis in an accessible, thoughtful, and creative way that also challenged individuals' everyday assumptions about mental health concerns (Boydell, 2011).

Dance has also been a means to disseminate knowledge on the human genome. *Ferocious Genome* focused on aging, ancestry, and perfection, and was a dance that arose through collaborations and post-dance discussion between genetic scientists and researchers (Jasny & Zahn, 2011). Dance has also been a medium to disseminate knowledge on spousal abuse, using the dance performance, *Ghosts of Violence*. *Ghosts of Violence* arose from the Fredericton-based Muriel McQueen Fergusson Foundation for Family Violence Research who asked the dance company to create a piece appropriate for a fundraiser for their *Silent Witness Project*. Dance has also served as a medium to disseminate knowledge through the dance performance, *Silent Survivor*, which blended traditional dance to tell the story of the Indian Residential school experience and shine light on a dark part of Canadian history. Following the dance performance,

a panel of Residential School survivors and invited representatives were available to interact with the audience and answer questions. This event provided the opportunity to explore, acknowledge, and understand Residential School's impact on First Nations people and Canadian society in a holistic manner rather than traditional academic presentations oriented to cognitive intellectual ways of knowing ("Thunder Spirit Consulting," 2013).

Finally, McCaw (2013) conducted a Delphi method research study to investigate expert opinions on the use of dance and movement in knowledge dissemination. The purpose was to investigate the unique characteristics of dance that make it an effective tool in research dissemination, in addition to some of the shortcomings to using dance in research. McCaw (2013) concluded that dance is a useful and valid method for disseminating research findings. Specifically, it is useful because dance is an expressive platform for both thought and action, with the ability to reach a wide range of audience members. Dance is a legitimate way of knowing and expressing knowledge differently and has the ability to express concepts and themes, such as hope, desire, isolation, and community better than written language. However, dance is not always the most appropriate method for disseminating knowledge and its usefulness depends on the objectives and goals of the research (McCaw, 2013).

**Multiple artistic forms.** In recent years disseminating research findings through arts has become increasingly popular and some researchers have begun to incorporate multiple artistic approaches to communicate their research findings. For instance, Nadkarni (2004) used drawings, paintings, and music to raise environmental awareness of canopy conservation. Twenty-three visual artists and musicians spend a week at Ellsworth Creek Nature Conservancy in Washington State, USA and were asked to express what they thought, felt, and perceived using their medium of choice for two daily three-hour shifts. The artists created pastel, acrylic, and charcoal images to capture the forest canopy, and musicians used oboes, bamboo flutes, opera, and classical guitar music to capture the forest canopy. The artwork from the project was showcased in an art exhibit entitled, *Branching Out: New Eyes in Old-Growth Forests at The Evergreen State College*, which engaged multiple audiences, beyond the artists and academics (Nadkarni, 2004).

Different art forms have also been integrated within the education system as a tool to teach and disseminate knowledge. The use of the arts in education is progressively recognized as a way to draw attention to the humanities and creativity in practice (Cox et al., 2010). For

example, music, dance, drama, and fine arts have been used to teach and make chemistry accessible to everybody (Lerman, 2003). Lerman (2003) explained that most students have little interest in learning about the concept of the ionic bond, however when the learning occurs through a love story between Sodium and Chlorine, like Shakespeare's Romeo and Juliet, students enjoy learning about the bonding relationship. In addition, the students who write and act out the script remember the concept of Sodium and Chlorine bonding much longer than through more traditional teaching methods. The same occurred for students who wrote and acted in *The Bondfather*, and for the students who danced *The Three States of Matter*. These methods have helped students and the public understand chemistry through artistic formats.

Multiple artistic methods may also be more effective in communicating research findings compared to conventional dissemination methods. Lafrenière and Cox (2012) compared two methods for disseminating findings to various audiences: the café scientifique<sup>1</sup> and the artistic performance<sup>2</sup>. The café scientifique was organized in a traditional knowledge translation format. Specifically, a facilitator introduced the topic of conversation followed by three panelists who each offered a ten-minute oral presentation, without visual aids, on being a human subject in health research. The artistic performance was on the same topic but encompassed four artistic mediums (e.g., poetry, drama, song, and visual arts). The artistic performance was created from selected portions of transcripts from the "Centering the Human Subject" study (p. 192). Survey results indicated that the artistic performance is more effective than the café scientifique in communicating research findings. The artistic performance generated more emotions among audience members, provoked more questions on the topic discussed, and a greater number of individuals were influenced to alter their initial understanding and opinion of an issue.

**Music.** Music is rarely used as a means to disseminate knowledge (Beer, 2013; Fraser & Sayah, 2011). However, music is a unique multi-faceted medium, which serves many purposes and benefits. As expressively described by American musicologist, composer, and teacher Charles Seeger, music is:

An art, a physical, physiological, psychological or cultural phenomenon, a mysterious and beautiful, but evanescent and intangible, fantasy, a weapon in the class

---

<sup>1</sup> A public gathering that provides researchers with the opportunity to discuss their work. Allows for shared dialogue between scientists and the general public in a non-academic setting where participants can enjoy a beer, glass of wine, or cup of coffee.

<sup>2</sup> Collaborative effort between researchers and artists where artistic mediums (e.g., poetry, drama, song, and visual arts), are used to communicate research findings.

struggle, a means of personal expression, a source of the aesthetic experience, a useful thing, a meaningless "sounding brass and tinkling cymbal," a satanic temptress of the idle mind, a profession, a hobby, a business" (Seeger, 1962, p. 156).

Music is a universal phenomenon (Loersch & Arbuckle, 2013) which is known in all societies throughout the world (Weinberger, 2006). Music is experienced in many different ways (e.g., listening, playing, composing, improvising), and it engages us physically, neurologically, emotionally, and spiritually (Sullivan, 2003). It is entwined in our cultures and personal identity (Solanki, Zafar, & Rastogi, 2013). Music is a means to explore our emotions, express who we are, and how we feel. It brings us closer to others, while also articulating our own beliefs and values. Music allows us to relive our past, to examine our present, and to dream of the future. Songs express our joys and sorrow, while revealing our innermost secrets, hopes, disappointments, fears, and victories (Bruscia, 1998). The use of music in therapy has been well-documented and has been recognized for its therapeutic properties in healing the body and mind. For centuries it was used for treatment of mental and physical illnesses, as well as to cure lovesickness and used as a form of communication for the pre-literate (Horden, 2000). In many non-western societies music was used as a way to re-new strength, create happiness and harmony, empower togetherness, and used in healing ceremonies to cure illness and disease (Gouk, 2000). For decades music has been used as a tool for teaching as music appeals to learners who may not be receptive to written words, but is engaging and allows for the active processing of thoughts, emotions, and imagination (Caine & Caine, 1990).

In recent years music has begun to take on a new role and researchers are now beginning to identify elements of music that make it suited for the purposes of knowledge dissemination. According to The Mental Health Commission of Canada (2015) music is a unique medium that appeals to learners because it is novel and attention-grabbing, and because music is a part of our everyday lives it can be easily associated with pop culture and could potentially reach new audiences. As such, music can effectively reach marginalized populations and is a tool which can connect with those potential learning challenges, such as low literacy (The Mental Health Commission of Canada, 2015). Music has also focused on how it can access emotional knowledge. For example, Baker, Kennelly, and Tamplin (2005) highlight music's usefulness as it helps clients process powerful emotions because it can bypass thought processes and defence mechanisms. They also suggest that song writing can successfully uncover hidden thoughts and

feelings and allows for the expression and release of emotions (Baker, Kennelly, & Tamplin, 2005). Other researchers, such as music psychologist Dr. Vicky Williamson, argue that music has the ability to attach emotions to events which can inform new understanding by creating lasting memories (“using music to help”, 2013):

Music is often tied up with very important events in our life and therefore it carries a degree of emotional attachment. Emotions not only helps to code a memory in a more elaborate way, but means that music can be triggered when we are in that particular emotional state or indeed trigger that state when we hear it again. (para. 7)

Other researchers have studied and recognized the numerous advantages for using music to disseminate research findings, including its ability to evoke strong emotional responses. For example, John Sloboda’s pioneering work on music and emotional response sampled 83 British adults and found that more than 80 percent reported having physical responses to music, including thrills, laughter, and tears when listening to music, while 70 percent said they enjoyed music because of its ability to evoke emotional responses (Sloboda, 1991). Music’s ability to evoke emotional response and emotional understanding has been demonstrated by German musicologist, arranger, and author Christoph Wolff through his analysis of Bach’s St. Matthew Passion, specifically through the Recitative and Aria. The Recitative is a lament of Jesus’ fate of crucifixion. Bach creates an emotional atmosphere of sorrow through four musical devices: the bass is monotonous and heavy, creating a slow, laborious pace; two oboes playing a mournful litany; the alto acts as a voice of suffering, singing large and eloquent melodic intervals; and the harmonic sequence is bumpy (Wolff, 2000). The emotional affect is one of suffering, while also creating a sense of hope and redemption (Ferrari, 2012). In contrast, the Aria creates an atmosphere of joy through four musical devices: the bass is lightweight and agile; the two oboes are joyous; the alto’s melody is transformed into an expanse melody; and the harmony of the Recitative is flattened. The emotional response has changed considerably and transformed from sorrow to joyous (Ferrari, 2012).

Music also has the unique capability to allow the listener to gain an understanding or empathize with others (Ferrari, 2012). Consider the music we encounter when watching a movie. We are familiar with the musical phrases and melodies of a villain and hero or ones that signify romance, joy, anger, or sorrow. We perceive the emotional and psychological content in music and are able to interpret the thoughts and feelings of the musician (Tsay, 2013). Music

allows us to be able to connect to a story of a person, character, or musician and we begin to understand how they are feeling. Thus, empathy is connected with our individual perceptions, interpretations, and the emotional reactions we feel when engaged in music (Greenberg, Rentfrow, & Baron-Cohen, 2015).

Music also has the ability to teach cultural awareness. Singing exists in most societies across the world and Hoffman (1978) suggested that that it is not possible to isolate music from culture, as musical knowledge is cultural knowledge (Ilari, Chen-Hafteck, & Crawford, 2013). According to Nettl (1983) songs consist of music, language, and cultural knowledge and serve as an expression of lifestyle, values, and belief systems, however what, how, when, and where songs are used varies greatly. Thus, songs have the potential to foster cultural understanding because they are a means to learn about different people's cultures (Ilari et al., 2013). Chelsea Green, assistant professor of music at The American University of Cairo suggested that teaching world music to her students provides them with a deeper understanding into different cultures ("Chelsea Green", 2013). For example, students listen to the lyrics, rhythm, chanting and calling presented in blues music and then compare this to songs sung by Black American slaves. By doing this student are able to identify the similarities in the music and gain an understanding of how blues music developed from slavery and contributes to the cultural identity of Black Americans. Thus, we can learn a great deal about culture since music is so intimately bound to culture. Music provides the opportunity to release emotions, especially when an individual believes it is unacceptable to convey such emotions because of cultural issues (Baker et al., 2005).

Another advantage held by music is its ability to communicate social messages and share knowledge (Baker et al., 2005). Loersch and Arbuckle (2013) argued that music evolved as a form of social communication and that it exists as a tool to pass information about a group's shared culture to a large number of individuals at once. Therefore, music holds a prominent role in culture (Pascale, 2013) since it has the power to communicate fundamental messages to a cultural group that is rooted in cultural identity (Seeger, 1962). For example, European cultures are known to sing songs relating to wars and battles, while religions use music as a way to communicate stories and messages about God and forgiveness. Music and song have also played an integral role in sharing traditional Indigenous knowledge and serve as a form of storytelling. For example, the Plains Cree (*Nehiyawak*) sing ceremonial songs in the traditional sweat lodge to

pray, connect with the Creator, and share their values and beliefs in stories (Williamson 2000). Thus, music unifies and strengthens communities by joining people together in a common experience (Pascale, 2013), while also appealing to a larger, more diverse population (Bastien, 2009).

Bastien (2009) demonstrated how music has been used as a means to communicate social messages about HIV/AIDS prevention in Tanzania. Music in knowledge dissemination is highly effective since oral communication is the most influential and widely accessible form of message dissemination in Tanzania (Masatu, Kvale, & Klepp, 2003). Furthermore, musicians in the Tanzanian community are well positioned to deliver health information to a larger audience in a familiar manner that generates interest in the message and acts as a source of credibility. In essence, the community is more likely to relate and listen to someone who is recognized in popular culture, rather than a health care professional. Using music to communicate HIV/AIDS prevention messages reduces the cultural gap between message and participants (Bastien, 2009).

Music has the ability to tell complex stories. For example, the live album *Free and Equal* by English saxophonist/composer John Surman featuring American jazz drummer/composer [Jack DeJohnette](#) is a reminder of the principles of the United Nations 1948 Universal Declaration of Human Rights. Throughout the album the woodwinds and brass represent two opposing voices with the underlying text referencing troubled world politics. Each voice (e.g., woodwinds and brass) are distinct with its own theme or motif. The voices speak together without negating or dominating the other (Daykin, 2004).

Song and music are also recognized for their ability to inspire social change. For example, Inuk musician Lucy Idlout wrote a song titled *Angel Street*, about a friend in an abusive marriage. However, she discovered that the song inspired the city of Iqaluit to rename the street where the women's shelter is located, Angel Street, in honour of her song and recognize the role of domestic violence in their community. Following the lead of the Mayor of Iqaluit, the Mayor of Fredericton, New Brunswick did the same and hopes to see a move for an Angel Street in every capital city in Canada (The Aboriginal Healing Foundation Research Series 2012).

Music and song present an inexpensive opportunity to reach a wide audience in an entertaining manner. For example, HIV/AIDS messages are able to be communicated through the music on the radio a large percentage of people, including those living in rural areas and low and middle income citizens (Familusi & Owoeye, 2014; Bastien, 2009). The music on the radio

acts as a powerful means of communication especially since such communities experience a shortage of health care personnel and accessibility to intervention strategies (Bastien, 2009). Robertson, Martin, and Singer (2003) suggested that alternative forms of dissemination, such as music, can enhance knowledge dissemination by reaching well beyond the intended audiences of peer reviewed publications. Alternative forms of dissemination become more widely accessible to a broader range of audiences, such as patients and the public, and create a common dialogue in order to express common health concerns (Robertson et al., 2003).

### **Examples of Music Used for the Purpose of Research Dissemination**

Research has also been conducted with the primary goal being to disseminate the research findings with music. For example, Gadanidis and Borba's (2013) research dissemination project created songs and videos to disseminate learned knowledge about math equations and concepts. The idea was that in authoring song lyrics and dramatizations the students would be able to demonstrate their conceptual understanding of complex ideas, such as linear functioning (Gadanidis & Borba, 2013). The students' learning on mathematical concepts was translated through a song and music video called *Math Surprise* which can be found at <http://researchideas.ca/>. Gadanidis and Borba (2013) also developed song lyrics from parents' feedback on what their children reported learning at school and what the parents learned in return. The parents' feedback song, *A Little Easy, A Little Hard*, can be found on Youtube at <https://www.youtube.com/watch?v=JXrESEoT65Q>. The song and music video allows the child's learning to be more visible to their parents, educators, and other stakeholders. More recently, George Gadanidis has launched a website entitled Research Ideas (<http://researchideas.ca/>) where additional songs and videos on students' mathematical learning and parental feedback songs can be viewed.

Dell (2011) and a team of colleagues translated findings from a drug addiction study into a song and music video, *From Stilettoes to Moccasins*, which can be found at <http://www.youtube.com/watch?v=1QRb8wA2iHs>. The study focused on understanding cultural identity and stigma in the healing journeys of criminalized Aboriginal women from drug abuse (Dell et al., 2014). Music was chosen as the medium to disseminate findings because music holds a historical significance in communicating knowledge among Aboriginal peoples (Dell, 2011), is recognized as a sacred form of Indigenous knowledge (Sefa Dei, Hall, & Rosenberg 2002 as cited in Dell et al., 2014), and served as a symbolic decolonizing strategy

where the Aboriginal women were able to reclaim their traditional cultural identity. Dell et al., (2011) conducted interviews with sixty-five Aboriginal women in treatment for illicit drug abuse and twenty women who had completed treatment at six National Native Alcohol and Drug Abuse Program (NNADAP), in addition to interviewing thirty-eight NNADAP treatment providers, most of whom were First Nation (Dell et al., 2014). The research team, treatment providers, Elders, policy makers, government and non-government decision makers and the women who were interviewed worked collaboratively with Woodland Cree singer and songwriter Violet Naytowhow to create a song and music video that would reflect the past, present, and future elements of healing (Dell, 2011; Dell et al., 2014). Findings confirm that culture is foundational for women to claim and re-claim a healthy identity as Aboriginal women and respond to the harmful impacts of stigma Aboriginal women face (Dell et al., 2014). Dell and the research team worked with public organizations, such as grassroots community organizations and Aboriginal mainstream media sources to disseminate the song and video. The song and video received positive feedback and evoked a visceral response in many people and served as a form of empowerment for the participants, research team, and audience (Dell, 2011).

It is rare for music in knowledge dissemination to stand as a lone medium. Disseminating knowledge with music is often incorporated with another medium, such as theatre, dance, and video. Exceptions include music therapist Mary Rykov's (2008) study on meaning making in a music therapy cancer support group, music therapist Vander Kooij's (2009) study about recovery themes in the song writing of adults living with mental illness, and music therapist Laura Beer's (2013) doctoral dissertation on the role of spirituality in the work lives of higher education administrative leaders. In the first study Mary Rykov (2008) used song as an arts-informed research method to represent the meaning of a music therapy support group for adult cancer patients. A song called *We are the Melody* was written by Mary Rykov based on observations, feedback, and journal entries from previous group sessions. The song was a way to represent the experiences of patients in the group and a way to bring closure to the group. The song lyrics not only addressed the personal experiences of the patients, but the potential experiences of the patients (e.g., what might happen later in life). The song addressed the sorrow and fear that often accompanies the ending of a group, but also represented the shared connections and friendship that has formed due to the group (Rykov, 2008).

In the second study, Vander Kooji (2009) used the process of hermeneutic phenomenology to generate themes by analyzing 17 songs written by three individuals about their experiences with mental illness as part of music therapy sessions. She also interviewed each individual about their songs as a way to enhance her understanding and interpretation of the participants' experience living with a mental illness. Vander Kooji focused on the participants' chosen words, metaphors, and creative arts including poetry, music, and visual arts to enhance her analysis. Initially, she completed simple coding of ideas on a line-by-line basis. When themes began to emerge she engaged in the re-writing process typical of phenomenology. The development of themes allowed Vander Kooji to construct a model which developed into a final written project in the form of a song that incorporated the emergent themes and described the lived experiences of mental illness. She concluded that the hermeneutic phenomenology of analyzing participants' songs and interviews about their mental illness and then re-writing the emergent themes into a completed song allowed her to actively listen to the intimate experiences of passion, suffering, and strength of the individuals and it allowed her to build a powerful connection to her clients (Vander Kooji, 2009).

In the third study, Beer (2013) wrote an article about her experience using music to represent and disseminate her qualitative research findings. In her doctoral dissertation project, she conducted a series of interviews to explore the role of spirituality in the work lives of higher education administrative leaders. She expressed that the stories and insights gathered through the interviews profoundly affected her, and she felt a great responsibility to accurately and respectfully transform their words into representations in a way that did justice to the level of intimacy they shared in their interviews. As a music therapist she decided to use music to represent her participants. She composed a personal song for each participant. Following this she reported that every one of the participants acknowledged that their personal song she had composed did indeed capture elements of who they are and how they are in the world. She concluded the music she created was able to capture key features of each individual's personality when words alone would not suffice. She also suggests that creating music offers the qualitative research world a natural, challenging, and satisfying expressive form for data to sound and be heard within (Beer, 2013).

## **Summary and Concluding Comments**

The purpose of this chapter was to provide a review of the literature on arts research. Using the arts, such as photography, drawing, and poetry for the sake of knowledge production gives participants an opportunity to express their thoughts, feelings, and gathering meaning and insight about their personal experience, while also allowing academic scholars to understand the personal experiences of their participants. However, the valuable information unearthed using knowledge production was not being transferred outside of academia to other important audiences, such as the general public and other stakeholders. Thus, in recent years there has been a shift away from knowledge production to knowledge dissemination to ensure all audiences benefit from the advances in the academic world. Dissemination of research knowledge has been showcased through theatre, photography, poetry, and dance, however in reviewing knowledge dissemination research a specific problem identified was the lack of research on using music for the purpose of research knowledge dissemination. In recent years only a few researchers have conducted studies that used music to disseminate research findings, and this accumulating knowledge has yet to be systematically integrated. The current study will explore music as a medium in knowledge dissemination by soliciting experts who have used this method. The guiding research questions are: (a) what characteristics of music make it an effective tool for disseminating knowledge? (b) when is it appropriate to use music to disseminate knowledge? (c) how do researchers and musicians use music to disseminate knowledge?

## **CHAPTER 3: METHODOLOGY**

The following chapter describes the study's research methodology. The chapter begins with the rationale for the research approach. Next, the Delphi method is described in terms of participants, data collection, and data analysis. Lastly, trustworthiness and ethical considerations are discussed.

### **Qualitative Research**

Qualitative research is concerned with answering the why's and how's of human behavior, opinion, and experience, which is difficult to obtain through quantitative methods (Guest, Namey, & Mitchell, 2013). The intent of qualitative research is to examine people's ways of organizing, interpreting, understanding, experiencing, and interacting with the world (Guest, Namey, & Mitchell, 2013). Essentially, qualitative research is interested in understanding how people make sense of their world or how people interpret a phenomena and the meaning they place on it (Creswell, 1998). The present study aimed to fulfill the intentions of qualitative research. The Delphi Method was used to gather rich data and gain holistic understanding of the phenomenon under study, which was the use of music in knowledge dissemination.

### **Conceptual Framework**

This study is informed by social constructivism theory. Social constructivism presumes that knowledge is a human construction and individuals are active participants in the learning process. It emphasizes the importance of culture and context in understanding what occurs in society and how societies construct knowledge based on this understanding (Schunk, 2000). Specifically, it explains the process by which people come to describe, explain, or account for the world in which they live. It constructs a common understanding as they have existed in the past, as they currently exist, and how they might exist into the future (Gergen, 1985). Social constructivism is associated with many learning theories, such as Vygotsky, Bruner, and Bandura's social learning theory (Schunk, 2000). Social constructivist approaches to the science of knowledge translation have the potential to support researchers exploring the ways in which learning in various contexts occurs and how new knowledge is created, disseminated, exchanged, and used to inform practice (Boydell et al., 2015). Although qualitative inquiries regarding music's educational and therapeutic strengths have been conducted, there is not an in-depth

exploration of when is it appropriate to use music to disseminate knowledge, how researchers use music to disseminate knowledge, and the advantages of using music to disseminate knowledge. A Delphi research design was well suited to my goal which was to systematically access and synthesize the knowledge of researchers and musicians who have used music to disseminate their research findings.

## **The Delphi Method**

### **Background**

The first Delphi method was introduced in the pilot study “project DELPHI” which was developed in the early 1950s for military defense purposes by Norman Dalkey of the Research and Development Corporation (RAND), a non-profit global policy think tank initially created to organize research and conduct data analysis to the armed forces in the United States (Linstone & Turoff, 1975). The Delphi method was designed to solicit expert opinions on “the viewpoints of Soviet strategic planner, of an optimal U.S. industrial target system and to the estimation of the number of A-bombs required to reduce the munition output by a prescribed amount” (Dalkey & Helmer, 1963, p. 458). To complete this task, experts were involved in repeated individual questioning, through questionnaires or interviews, without direct interaction occurring between the experts (Dalkey & Helmer, 1963). At the end of the project, Dalkey concluded that the method was highly conducive to producing preliminary insights into the subject matter. He suggested that the method had the potential to develop into a more effective research method, even though predictions obtained in the form of an opinion consensus may be lacking in reliability (Dalkey & Helmer, 1963).

The Delphi method is recognized today as a consensus building tool and used to elicit information from participants to facilitate problem solving, planning, and decision making which capitalizes on creativity (Dunham, 1998). The Delphi method is considered appropriate to use as a tool for judgment, forecasting, and exploring a topic where there is incomplete knowledge (Adler & Ziglio, 1996). It is a non-interactive technique (e.g., the participants never meet face-to-face), making it possible to draw upon experts who are based at different geographic locations (Briedenhann & Wickens, 2002). The method is also helpful in decision making when individuals have opposing personality differences or intellectual style or when individuals have strongly held ideas, conflicting opinions, or are emotionally attached in a particular topic (Cline,

2000). The Delphi method has also been recommended in evaluation studies where conflicts between stakeholders could occur and could potentially derail the focus of the study (Patton, 1997).

### **Current Understanding**

The Delphi method is a “multi-stage process where each stage builds on the results of the previous one” (p. 153) informed by expert opinions; those who have considerable knowledge on the topic being investigated (Sumsion, 1998). A repetitious process is implemented in which opinions of experts on a particular topic are collected and synthesized using a series of questionnaires interspersed with feedback (Skulmoski, Hartman, & Krahn, 2007). The participants all complete the same questionnaire in consecutive rounds, usually two or more times (Loyens, Maesschalck, & Bouckaert, 2011). After each round they receive feedback on their answers, both from researchers and the other fellow participating experts (Loyens et al., 2011). The process stops when either a consensus is reached or when sufficient information has been exchanged (Skulmoski et al., 2007). The Delphi method is based on the assumption that shared intelligence amplifies individual judgment and captures the collective opinion of experts (Linstone & Turoff, 1975). In general, the Delphi method is a structured process for collecting and distilling the judgements and knowledge of experts using a series of questionnaires combined with directed opinion feedback (Adler & Ziglio, 1996).

An important and unique characteristic of the Delphi method is the anonymity of the research participants (Loyens et al., 2011). Only the researcher knows the identity of the participants therefore none of the participating experts know of each other (Loyens et al., 2011). Throughout the entire process the experts participate independently without meeting in person. They only receive anonymous feedback from other participating experts who after each round give comments to the contributions of other participants (Powell, 2003). The anonymity associated with the Delphi method is meant to allow participants to give their opinions freely without potential influences from other group members. It provides them with the opportunity to formulate a different or opposite opinion from the ideas of authorities in the field (Loyens et al., 2011).

There are many Delphi method techniques (e.g., decision Delphi and policy Delphi), all of which originate from the classical Delphi method (Van Zolingen & Klaassen, 2003). The classical Delphi collects data individually from experts in a number of rounds (Van Zolingen &

Klaassen, 2003). The results of proceeding rounds are fed back to the respondents until stability in responses on a specific issue is reached through iteration. Rowe and Wright (1999) defined four key features that characterize the classical Delphi:

1. Anonymity of Delphi participants: allows the participants to freely express their opinions without undue social pressures to conform from others in the group. Decisions are evaluated on their merit, rather than who has proposed the idea.
2. Iteration: allows the participants to refine their views in light of the progress of the group's work from round to round.
3. Controlled feedback: informs the participants of the other participant's perspectives, and provides the opportunity for Delphi participants to clarify or change their views.
4. Statistical aggregation of group response: allows for a quantitative analysis and interpretation of data (p. 354).

Although nearly all studies which use the Delphi method encompass these traditional core features, the Delphi method also has been adopted by researchers and tailored to meet the needs of their particular study. Thus, there is no "typical" Delphi; rather it is a method which can be modified to suit the circumstances and research question, such as in the case of this study. Nevertheless, some researchers believe that only those studies which have the four characteristics should be classified as Delphi studies (Rowe & Wright, 1999).

### **Purpose**

The Delphi method is reported to be a valid instrument for forecasting and supporting decision-making (Landeta, 2006). Construct validity is increased through participants validating their responses after completing each round (Okoli & Pawlowski, 2004). The reliability of the Delphi method cannot be confirmed because of the lack of administrative standards to guide the administrations process (Quaile Hill & Fowles, 1975), however test-retest reliability is not relevant in the Delphi method since participants revise and elaborate their responses after receiving feedback from each Delphi round (Okoli & Pawlowski, 2004).

### **Strengths and Weaknesses**

Like all research methods, the Delphi method has both strengths and weaknesses. One criticism is from Weaver (1972) who questioned the methods of selecting the panel of experts and the evaluation of their level of expertise. Data are based on the exclusive judgements of the

participants who have been selected due to purposeful sampling and there is a concern that the data may not be representative. This suggests that it is possible to obtain different results from different groups (Briedenhann & Wickens, 2002), although this is not necessarily a concern given the social constructivist assumptions of this present study.

Furthermore, the criteria for selecting expert participants has been criticised as not being serious enough, which can affect accuracy of results as their calibre determines the quality of the outcomes of the survey (Harrison, 1995). Other critics question the amount of control of the study by the researcher due to the level of influence and potential for bias in the design of the questionnaires and the interpretation of responses (Salanick et al., 1971).

However, advocates for the Delphi method cite the fact that the surveys create an opportunity for interactions between experts who cannot physically come together in an inexpensive way. The Delphi method also take advantage of the knowledge and experience of a cross sectional group of experts within a specific area of research, which assists in providing researchers with a broad perspective of the issues under review, rather than an isolated point of view (Briedenhann & Wickens, 2002). Finally, the anonymity of individual responses allows for the ability to remove the effects of prejudice, peer pressure, desire for conformity, and enhances the honesty of respondents, while simultaneously exposing agreements and disagreements (Briedenhann & Wickens, 2002).

### **Rationale for Using the Delphi Method**

The Classical Delphi method was utilized in the present study since this method is particularly useful where there is little or no published information on a subject under consideration (Loyens et al., 2011). The classical Delphi method is recommended when there is incomplete knowledge about a problem or phenomena (Alder & Ziglio, 1996). As noted in the literature review in chapter two, there is a growing body of research using the arts for knowledge dissemination; however, there are few studies that focused on music as a medium for knowledge dissemination. Furthermore, there appears to be no current literature that identifies (a) what characteristics of music make it an effective tool for disseminating knowledge, (b) when is it appropriate to use music to disseminate knowledge, and (c) how do researchers and musicians use music to disseminate knowledge, thus making the classical Delphi method ideal. The classical Delphi method is also utilized as it is designed to effectively structure group communication and allow the panel of experts to deal as a unit with the research questions thus

facilitating the formation of a group consensus. Specifically, the Delphi method can effectively engage participants from diverse geographical locations, in a non-interactive environment, and minimize the conflict that may occur due to personality differences, intellectual styles, strongly held ideas, conflicting opinions, or emotional attitudes that may occur in face-to-face contact. Alexander and Serfass (1999) suggested that individuals who are most likely to have knowledge about a subject are those who have expert knowledge, therefore the classical Delphi method was chosen as it allowed the researcher to gather a group of experts (e.g., researchers and musicians) who have firsthand knowledge on the unique characteristics of music that make it effective in research dissemination. This method was also chosen because compared with face-to-face interaction, this method does not require a large time commitment from participants and is more cost-effective.

## **Procedures**

### **Selecting and Recruiting Participants**

A critical component in selecting participants is by recruiting those who are considered experts (Adler & Ziglio, 1996). According to Adler and Ziglio (1996), four requirements which determine expertise of participants are (a) knowledge and experience with the issues under investigation; (b) capacity and willingness to participate; (c) sufficient time to participate in the Delphi rounds; and (d) effective communication skills. The participants are not intended to represent the general population; therefore, the participants are selected using purposeful sampling. Purposeful sampling refers to selecting individuals based on a specific purpose and criteria contrasted with random sampling that involves selecting individuals based on an equal independent possibility of being chosen (Teddie & Yu, 2007).

For the present study, I recruited participants who have unique knowledge about using music for knowledge dissemination. Specific criteria for selecting participants included identifying:

1. researchers who had used music in research as a medium for disseminating knowledge; and
2. musicians who had collaborated with researchers in some aspect of the research process

Further criteria included:

- a) having some form of experience with the arts (i.e., arts researcher/or researcher aware of arts research, music, etc.);
- b) being willing to provide their expert opinion via email with the researcher and the other panel members;
- c) being willing for the researcher to share their responses with other panel members;
- d) being comfortable with computers (i.e., typing and able to interact through email) and having access to a computer;
- e) being willing to complete the Delphi rounds (at least 2, no more than 4);
- f) being eighteen years or older; and
- g) being fluent in English.

A snowball technique was used to recruit participants. Potential participants were identified through searching websites, articles, and newspapers. The potential participants were also asked to pass on the invitation to other potential participants that they thought would meet the inclusion criteria.

Thirty-eight potential participants were sent an invitation to participate in the Delphi study via email (See Appendix A). The invitation included a description of the study, the selection criteria, expectations of the expert's involvement in the study, and an estimated timeline for completing data collection. Once the pool of participants was established, meaning they confirmed meeting the participation criteria and were willing to participate, the consent form that included the objective and rationale of the study, the study's procedures, participants' responsibilities, and the estimated timeline was signed and returned by the participants (Appendix B). Following this, a timeline to conduct data collection was confirmed. The instructions for participating in the study and accessing and completing each questionnaire was relayed to each participant via email.

Of the 38 potential participants: four did not fit the study's participant criteria, four participants declined because she/he were too busy, one responded and expressed interest but disengaged after being informed about the details of the study, two participants were retired and no longer involved in research, and 27 did not respond to the study's invitation to participate.

The sample size varies from 3-171 experts in Delphi studies (Skulmoski, Hartman, & Krahn, 2007). In this study, the sample ended up being seven. Initially nine participants were recruited and signed consent forms. Two participants dropped out during the Round One Delphi

questionnaire and did not contribute any data. In the end, six participants contributed data to both Round One and Round Two, and one participant contributed data to only Round One. The decision was made to retain the data from this participant in Round One because their data described their personal experience in using music to disseminate research, which added to the richness of that data. Their data were also considered valuable as few researchers are currently using music to disseminate their research. This participant agreed that their data could still be used for data analysis.

### **Data Collection and Analysis**

Beyond the four characteristics associated with the classical Delphi method, there is no typical Delphi; rather the method is modified to suit the circumstance and research question(s) (Skulmoski et al., 2007). As such, this study did not complete the fourth characteristic, statistical aggregation of group response, due to a small sample size and that the goal of the research was to gain an understanding of how the phenomena is being interpreted, understood, and experienced from the perspectives of the participants (qualitative research), rather than discovering fixed and measureable facts about the phenomenon (quantitative research); a quantitative analysis and interpretation of data was not completed. A Delphi study can have one, two, or three rounds of data collection. The number of rounds depends on the goal of the research and how quickly experts reach a collective opinion (Skulmoski et al., 2007). The present study was developed on the prediction that two rounds would be sufficient; however, a third round would possibly be necessary to reach sufficient richness. Delbecq, Van de Ven, and Gustafson (1975) suggest that 2 or 3 Delphi is sufficient for most research if the group is homogeneous. Specifically, if a group is homogeneous and it is suspected that there will be few differences in opinion less than three rounds is sufficient. Furthermore, as the number of rounds increases researchers often see a fall in response rates (Alexander, 2004; Rosenbaum, 1985). After two rounds of data collection, a careful consideration was undertaken to determine whether a third round should be completed. Through my analysis of the data as well as discussion with my supervisor, we agreed that there were sufficiently rich data and a third round of data collection would not be conducted.

**Round One.** Round One involved distributing the first questionnaire (see Appendix C and D) via email to the Delphi participants, who had a week to complete and return it to the researcher through a secure email (Skulmoski et al., 2007). The results of Round One were then analyzed thematically. Thematic analysis consists of reading through textual data, identifying

themes in the data, coding those themes, and then interpreting the structure and content of the themes (Braun & Clarke, 2006). The purpose of Round One was to collect basic demographic information (See Appendix C) and gather information about the participants' most recent experience using music to disseminate research plus four key questions (See Appendix D). Information collected included the title of the study, research purpose(s), research design/procedures, how music was part of the study, number of team members and roles, the participant's role and responsibilities, benefits of incorporating music, and the challenges inherent in this method of knowledge dissemination. Following this, four key questions were posed. First, participants were asked if they thought music was a useful means for disseminating research findings and to provide an explanation. Second, participants were asked when it is appropriate to use music as a tool for disseminating research findings and if there are certain kinds of projects, purposes, and topics suited for the use of music or can music be used in all research? Third, participants were asked about how to incorporate music into research for the purpose of disseminating research findings and if there are particular steps to the process. The last question provided participants the opportunity to give advice to others interested in using music to disseminate research findings. These open-ended questions served as "the brainstorming round" to help formulate more detailed questions to investigate the unique characteristics of music that make it an effective research tool for research dissemination.

**Round Two.** Round One responses were the foundation in the creation and development of the questions in the Round Two questionnaire (Skulmoski et al., 2007). Depending on the research goal, the researcher may be directed by the opinion of the participants, or the researcher can direct the focus of the research (Skulmoski et al., 2007). In the present study, Round Two (See Appendix E) contained anonymous responses from Round One as well as new questions. Excerpts from Round One were chosen for three reasons: 1) responses were unclear and needed clarification; 2) responses were unexpected or unanticipated and required further investigation; and 3) responses contained interesting phrases, metaphor, or statements that were eloquent and evocative which required further investigation. Excerpts were Round One were presented and participants were asked to read each statement and answer the corresponding questions. Some questions focused on the participants' quotes selected from Round One data. These quotes were intended to explore whether a consensus, or agreement amongst participants, could be reached. Questions were also posed to participants relating to the consensus already reached from the

Round One data. These questions were intended to address specific details about the consensus that emerged from Round One. As in Round One, result from Round Two were analyzed thematically.

**Data Analysis.** Data analysis in any qualitative research is subjective because the instrument for analysis is the researcher who essentially makes all the final decisions and judgments concerning interpretation, coding, and categorization of the data. The written responses from the two rounds of data collection generated text that was analyzed inductively. Inductive analysis means that data was coded without trying to fit it into a pre-existing coding frame and was not influenced by the researcher’s analytic preconceptions (Braun & Clarke, 2006). Furthermore, inductive analysis involves beginning with specific collected data and eventually moving to a more general conclusion based on the research findings (Schwandt, 2001). In the first round of data collection, the participants’ responses were coded to identify areas of consensus and emerging categories. For example, I created seven data sets from each panel members’ responses and then read through their responses multiple times for general meaning and understanding. During this time, I generated an initial list of codes and what was interesting about the data. Then I consolidated the data into one data set and conducted a closer reading and analysis to identify key words, codes, and common meanings that were then grouped together in themes. See Table 1 for closer understanding of data analysis. In the second round of data collection, participants’ responses were analyzed in the same way. In the final stage of data analysis, I consolidated both data sets from Round One and Round Two where themes were refined and collapsed into eight identified areas of consensus. After each round of analysis, I consulted with my thesis supervisor to discuss areas of consensus and emerging categories. These meetings provided an opportunity for additional and alternative interpretations, comments, and understandings of the participants’ responses.

**Table 3.1: Researcher Data Analysis**

<b>Themes</b>	<b>Participants Quotes/Phrases</b>	<b>Researcher Interpretation</b>
Evokes emotional, visceral, embodied responses	<ol style="list-style-type: none"> <li>1. Music communicates that which words cannot express</li> <li>2. Emotional lift</li> </ol>	<ol style="list-style-type: none"> <li>1. Music has the ability to express mood, feelings, and emotions in a much simpler way than words. At times expressing our feelings in words is complicated and difficult. Music sums up our feelings and expresses them easily.</li> </ol>

---

		2. Music can enhance the expression of mood or feelings.
Reaches larger audiences	1. It [Music] allows you to access a completely different audience (general public, more service providers)  2. It [Music] makes the data more accessible	I think the statements speak for themselves that music has the ability to engage broader audience beyond that of academia (e.g., general public and more stakeholders).
Creates connections	Music was the heart of the project and the means through which members created connections	Music is a way for people to create connections together through sharing an experience, especially through the process of making music together.

---

Once participants completed both of the Delphi Rounds and the researchers agreed that a consensus had emerged, participants were emailed a debriefing and thank-you letter (see Appendix F), which outlined the purpose of the research study, outlined participants right to withdraw their data, and acknowledged the importance of their contributions. Participants were also advised that an electronic copy of the thesis would be sent upon the successful defence and submission to the College of Graduate Studies and Research.

### **Evaluation Criteria for Trustworthiness**

Trustworthiness gauges the “effectiveness and appropriateness of a Delphi study” (Hasson & Keenley, 2011, p. 1700). To enhance the trustworthiness of the present study the concepts of credibility, dependability, confirmability, transferability, bracketing, and reflexivity were incorporated. The credibility of a Delphi study can be enhanced by continuous iteration and feedback given to expert panelists (Engels & Kennedy, 2007). This was accomplished in the present study by anonymously including participants exact responses from the first round of data collection as feedback in the Round Two questionnaire. Dependability can be achieved by including a range and representative sample of experts in a Delphi study (Cornick, 2006). The sample of participants in the present study had expert opinion about using music to disseminate research findings across various disciplines (e.g., health, education, music, performance). All of the participants had used music to disseminate research (or were identified as musicians). Confirmability can be evaluated by maintaining a comprehensive description of the data collection and analysis process. This was achieved in the present study by following a clear

structured timeline for data collection that involved an organized and systematic process of creating and dispersing each questionnaire one after another. In data analysis for each Delphi round, participants' responses were organized, coded, and categorically charted. This provided an organizational system for data, which was very helpful for interpretation and analysis. Lastly, transferability can be established through the confirmation of the application or relevance of Delphi findings (Powell, 2003). The present study was the first to systematically access and synthesize the expert knowledge of researchers and musicians who have used music to disseminate research findings. I hope that these findings will be transferable to other researchers and musicians considering using music in research dissemination as well as ethics boards and those involved in arts research.

As an individual I have a personal connection with music thus my interest and commitment to this research is personal. This was both a resource and a potential shortcoming. Exercising reflexivity allowed me to draw on the strengths associated with having personal knowledge whereas bracketing provided a means to set aside personal knowledge. According to Ahern (1999), bracketing is the "process by which researchers endeavor not to allow their assumptions to shape the data collection process" (p. 407) or the "ability to put aside personal feelings and preconceptions" to the best of their ability while collecting and analyzing the data (p. 408). Tufford and Newman (2010) recommended the following methods of bracketing: (a) writing memos throughout data collection and analysis as a means of examining and reflecting upon the researcher's engagement with the data, (b) consulting with an outside source such as a research associate to uncover and bring into awareness preconceptions and biases, and (c) having a reflexive journal to enhance the researcher's ability to sustain a reflexive position. In the present study, two of these recommendations were followed: (a) I consulted with my research supervisor and research committee to enhance bracketing and (b) I kept a research journal to track and reflect on personal responses through the research process. Reflexivity, on the other hand, is a way to work with subjectivity. Ahern (1999) defined reflexivity as one's ability to both "put aside personal feelings and preconceptions" and to "realize that they are part of the social world that they study" (p. 408). Thus reflexivity is the realization that it is impossible to completely be free of personal feelings and preconceptions (Ahern, 1999). Reflexivity is being honest and explicit about one's subjectivity, which will inevitably shape and inform analysis (Ahern, 1999).

### **Ethical Considerations**

The current study received ethical approval from the University of Saskatchewan Advisory Committee on Ethics in Behavioural Science and Research on April 15<sup>th</sup>, 2015 (BEH # 15-63). Ethical concerns relating to the protection of participants from harm is imperative in any research study (Orb, Eisenhauser, & Wynaden, 2000). Participation in the study was strictly voluntary. Participants were made aware of confidentiality issues and that they had the right to withdraw at any time during the study, which was informed through the informed consent process. Since the internet was used to collect data from participants via email particular attention was placed on ensuring the security of participants' responses. I used a secure private email account that only I have access to when communicating with participants and receiving their data. Once I had received the participants' questionnaires I deleted them from my private email account and stored them on a secure computer that only I had access to. It is important to note that the Delphi method cannot ensure anonymity, however extra care was taken to ensure confidentiality in participants' responses when summarizing and using direct quotes during the Delphi rounds.

In accordance with University of Saskatchewan regulations, data will be securely stored for the required minimum of five years in the office of my supervisor in the Department of Educational Psychology and Special Education. After five years, all data records will be appropriately destroyed beyond recovery.

## **CHAPTER 4: RESULTS**

The purpose of this chapter is to describe the findings of this study. I start by introducing the participants who contributed to this study. Any names or distinguishing information about the participants have been changed. Next, consensus statements of the findings are presented, followed by supporting quotations from participants. The majority of participants' quotations are cited verbatim in order to enhance the authenticity, meaning, and context of the findings. Some omissions and additions were made to quotes to ease readability and these are notated by ellipses (for omissions) and square brackets (for additions). Following this, an area of non-consensus that emerged amongst participants is presented. Lastly, findings are considered in terms of the study's guiding questions.

### **Participants: The Delphi Expert Panel**

An international panel of seven experts was recruited, two males and five females who ranged in age from 33 to 66 years, and self-identified as Canadian, Caucasian-British, Caucasian, and Indian/American. As one participant failed to complete the demographic questionnaire, further demographic information is presented for six of the experts.

Four participants were employed university faculty members working in the fields of medicinal chemistry, biology, sociology, and health and applied social sciences: two in the United States of America, one in Canada, and one in Britain. Another participant worked as a music therapist in palliative care and another participant was a self-employed musician/composer. All participants were university educated. Four participants held Doctoral degrees, one held a Master degree, and one held a Bachelor degree. Five participants identified themselves as researchers with 6 to 48 years of experience, one identified as a musician and composer with 40 years of experience, and three identified as being both a researcher and a musician with musical experience ranging from 20 to 60 years. To protect participant confidentiality, the pseudonyms of Adalyn, Brittany, Claire, Valery, Roxanna, Keith, and Alan were assigned to each of the seven participants.

### **Consensus Statement of Findings**

Eight themes of consensus were identified in the Delphi Rounds data analysis. The expert panel agreed on the following statement of findings:

1. Music can reach a larger audience than traditional research dissemination tools.

2. Music can convey a variety of research topics, sometimes multiple concepts all at once, by telling a story.
3. Music evokes emotional, visceral, and embodied responses and creates connections between individuals through a shared experience.
4. Music provides a way to express knowledge or ideas either differently or, in some circumstances, better than language because music can create interest, is emotional, inspiring, and universal to all humans.
5. Music is valid and acceptable to use for all research projects and there is no singular procedure for using music to disseminate research findings.
6. Using music for the purposes of knowledge dissemination is complex, time-consuming, and requires expertise.
7. Music is acceptable to use as a standalone or supporting methodology, however regardless of the methodology the intent of the research is fundamental.
8. Although current ethical guidelines used for music in research are sufficient, it is concerning that there are no ethical procedures for knowledge translation research.

### **Music can reach a Larger Audience than Traditional Research Methods**

Throughout Round One and Two of the Delphi data collection participants agreed that music could reach a large audience. For example, Brittany attested that “[music can] disseminate the findings to a much broader audience” and “allows you to access a completely different audience, [such as the general public and more services providers], than an article would alone.” Alan suggested that the benefits of disseminating research ideas with music was that it makes the “data more accessible” to the general public and allows for the general public to become more engaged in a scientific concept.

### **Music can convey a Variety of Research Topics, sometimes Multiple Concepts all at once, which can tell a Story**

A variety of topics amenable to music, which can tell a story, was illustrated clearly. For example, Alan’s experience in using music to disseminate research involved “biochemistry, biology, chemistry and medicine” through the use of data sonification, which is the process of turning research data into music. He was inspired when he witnessed a project that used a string quartet composition paired with videos to express the global and personal impact of climate change. Brittany used music to disseminate research on “social justice, healing, love, and

happiness,” and considered music as “a whole package” which can express several concepts all at once. She explained that the lyrics in the song tell a concise story because they are “simplicistic, catchy, and rhyming” and allow an audience to get a summarized story of what was uncovered, rather than “a piece of a story,” which is what she believes occurs in traditional research. She also expressed that “all of our songs have a music video with them to help share the story” where the multiple concepts can be expressed in a single piece of music.

### **Music evokes Emotional, Visceral, and Embodied Responses and Connections through a Shared Experience**

The participants’ responses all echoed the same belief that music has the ability to create emotional, visceral, and embodied responses. Keith’s experience using music as a supporting medium for a dance performance led him to believe in music’s ability to create a visceral response, set an emotional tone, and evoke strong emotions. He suggested that (a) “music is a medium [which can] translate emotions [because there is an] etherealness of music [that] reaches where words cannot”, (b) music provides an “emotional lift” that enhanced the dance experience and “reflected the corresponding attitude of the performance” and, (c) “music can stir certain responses which can lead to either positive results or disturbing results” and “music can have surprising effects on the listener. Memories may stir of certain experiences. These experiences can be analysed and doors can open.” Further, Keith wrote that music “touches our heart-strings” and suggested that it is our own interpretation and experience of the music which allows for us to “create our own visuals and let the emotions run on its own.” He proposed that “this is evident at memorials or funerals, [where] a moment of silence elicits much less emotions than a 3-minute piece of music being played.” Keith also reported on the mathematical logic of music and its ability to evoke emotions: “music is based on mathematics; timing, dividing, quantizing” and “the analytical side of the brain can relate to the construction of music and have emotional responses as a result.”

Alan acknowledged choosing to use music as a tool for research dissemination about scientific concepts because of music’s unique ability to elicit emotional and visceral responses from listeners. Adalyn reiterated music ability to create a visceral response by suggesting that “it communicates that which words cannot express.” Although Brittany noted that a large majority of music has words in it, she nevertheless recognised music’s ability to “evoke strong emotions” and believed that music is better at prompting emotional and visceral response because “words,

due to language barriers, can be isolating.” Roxanna elaborated on music as an embodied experience that touches everyone:

Music making and music listening are embodied experiences that touch people on emotional, sensory, intellectual, creative and spiritual levels of being. I have worked as a music therapist for 27 years and in all that time, I have never met anyone who did not respond in some way to music and the process of music-making (e.g., improvising with instruments, improvised song writing, composing songs).

The expert participants expressed that music has the ability to produce strong emotions and create visceral and embodied responses, through music’s ability to express what words cannot.

During Round One of data analysis a theme emerged from the expert participants’ responses that music has the ability to create connections between individuals through a sharing or a shared experience. Adalyn suggested that music has the ability to engage people and relate to one another through creating music and shared listening. She detailed her experience using musical improvisation with clients and how clients were “aware of each other’s sounds and responded sonically and socially.” Music “was the heart of the project and the means through which members created connections.” Adalyn elaborated on the connections that developed between individuals through their shared experience of creating music that could be heard through the music by stating:

There was an indescribable awareness that happened between participants and facilitators at times that came out through the musical dialogues and overall verbal and expressive interactions among members. I suppose I could describe it in words: “indescribable awareness” but stating that does not have as much impact as showing a video example of how this occurred or listening to some of the audio which we created.

Brittany also emphasized how the shared experience of music can “help establish a therapeutic alliance” between services providers and their clients. As such, the therapeutic alliance is about creating a connectedness with a client through trust, comfort, and a shared goal. Last, Valery described the connections created by music between individuals and subject matter that might not have naturally existed: e.g., “the urban youth found relevance in nature because they related to the rap singer and his music.”

**Music provides a way to express knowledge or ideas either differently or, in some circumstances, better than language because music can create interest, is emotional, inspiring, and universal to all humans**

Several participants acknowledged music's advantageous ability to communicate knowledge. Claire reported that she has used music to disseminate her research, "as it gets across what is actually going on in the [singing, playing, listening, and improvisation] sessions." Valery described how the "rap artist created songs about the items of nature that the youth encountered and the youth created rap songs of their own to express their encounters with nature", which illustrated how music captured and communicate knowledge. Furthermore, Valery reported that "music worked to stimulate interest in the environment in people who would not otherwise be interested." The participant's interest in music allowed them to express their learning about an idea. Brittany emphasized an "Indigenous worldview" and how music is a fundamental way of understanding that has and continues to play a role in the communication of knowledge among Indigenous populations worldwide (Lehr, Bartlett, & Tabvahtah, 2006).

The expert participants also agreed that music can communicate ideas differently because it can add to traditional knowledge dissemination practices. For example, Roxanna noted that "music allows our imagination to interact with knowledge" and that we use our "life experiences in order to create and understand anew." Adalyn reported that music can enhance the understanding of an idea because "music is emotional and highly mathematical at the same time and thus could be used to fully represent a complex idea or concept." This idea suggests that music can communicate with both sides of the brain to aid in the delivery of quantitative data, like graphs, charts, or scientific jargon. Alan reiterated this idea by stating that "music can communicate beyond what words or graphs to something more profound."

The emotional qualities of music were highlighted as facilitating a different understanding of research ideas. Keith expressed this idea as follows:

Typical symposiums on mental health (lectures, presentations, discussions) don't take researchers to a new understanding. With [my research], participants were presented with an emotional connection through music. Participants commented that the emotions derived from the experience helped remind them of why they began in this field in the first place: a sort of re-birth through music and dance to help inspire fresh thinking and cooperation in further research. Inspiration is something all humans require.

Adalyn also voiced an opinion on the emotional qualities of music:

Music can create another representation of a concept or idea that may be difficult to describe in words. Music is a language which everyone seems to have an innate understanding of because it connects to emotion. For example, I'm more apt to understand an emotion if it is encapsulating in a piece of music rather than if it is represented in numbers or a physical description. I will truly get the essence of the emotion if it is described through music.

Alan echoed a similar response, "like poetry, it is very common for me to associate specific pieces with strong emotions that words fail to capture" and elaborated on the emotional qualities of music that make it better at communicating knowledge by stating that:

Music engages the mind, both intellectually and emotionally. By engaging the listener emotionally through a powerful personal experience the individual may connect to the science in an enhanced fashion. Music alters both the scientific brain and the emotional brain. Music creates more of a clarifying relationship between music and science.

Participants also describe how music can communicate the hidden or subtle changes about knowledge or an idea. For example, Alan uses data sonification, which is the process of turning research data into music. Specifically, quantitative data is mapped to musical notes, with higher numbers representing higher pitch and lower numbers representing lower pitch. He explains that, "sonification of music is one approach to converting research data to something in which hidden or subtle patterns are more readily discerned, bringing hidden insight to the data itself and the interpretation of the data." By this, Alan suggests that music has the ability to communicate the slight or subtle changes in research data, such as the subtle changes in the weather due to climate change.

Adalyn also wrote about music's ability to communicate hidden concepts. For example, she stated that:

I find that music often captures those things that people try so desperately to hide, would rather never talk about in the first place, or are too overwhelming to talk about. Music reveals secrets in a safe way...and those secrets don't need to be spoken, but only felt. In many instances, I've had clients reveal music to me that is highly associated with how they are feeling and what they would like to express, both through lyrics and sound.

With this in mind, using music as a research methodology in any way will really capture

anything that could be hiding in the background and thus create a very true depiction of the concept. Music doesn't lie.

From the participants' responses it is clear that music has the ability to communicate knowledge and ideas since it can aid in interpretation of quantitative data, it can communicate knowledge differently because of its emotional qualities, which are universal to all humans, and can communicate subtle changes in data, and hidden emotions.

### **Music is Valid and Acceptable to use for all Research Projects with no Singular Procedure existing**

Participants all agreed that music is a valid and acceptable medium to use for all research projects, including qualitative and quantitative research, but that it ultimately depends on the creativity of the researcher and participants involved. Adalyn describes her position by stating:

Depending upon the project and the openness of the researcher, it could potentially be used all of the time to acquire more in-depth experience of data and experiences. It might be more appropriate, I suppose, for studies which involve the arts or a study of artistic methods. In heavily quantitative studies, it may not be as relevant but in the end could probably communicate more than the numbers or something in adjunct to the numbers.

Roxanna responded similarly:

It would depend on the research topic, purpose, research questions, plus who was involved as researchers and participants. As well, music requires particular skills, knowledge and attitudes, especially when performing music improvisation and analyzing musical data.

Claire simply stated that "yes" music is appropriate to use for all research projects. Brittany elaborated on the idea that music can be used for all types of research by describing her experience with using music in research:

I think with creativity it can be used with all. We have worked where the participants created the song and music video, but are also working with a population now for which it is difficult to communicate and so we are working with a musician to have him make the song and then we will use it as a celebration to complete the project.

Expert participants were also unanimous in their belief that no singular procedure exists for how to use music to disseminate research, although they believe that regardless of the methodology (e.g., mixed-methods, arts-based, interviews, case studies), some kind of step-by-step process

was important. Alan suggested there are two ways, either adding the science after the music or de novo, meaning conducting the research and developing music from this research.

### **Music in Research is Complex, Time-Consuming, and Requires Expertise**

All the participants described the research design and procedures of their most recent experience using music to disseminate research findings. From this, a small snapshot was captured about the complexity, time-consuming aspects, and need to connect with the experts when considering this type of research. For example, Alan's continuous role in "[discussing] with composers and performers by Skype, phone, and in person to identify themes and pieces that would express scientific concepts through music" illustrated the complexity and time-consuming aspects of trying to use music to disseminate information. Furthermore, Alan commented on the complexities involved with "raising money," "coordinating schedules," and finding "venues for composing and presenting the work." Roxanna described the time commitment and multi-faceted aspects of utilizing an arts-based methodology approach such as Guided Imagery and Music (GIM):

The methodology includes the creation of *Imagery Poems* (poetic inquiry) constructed from a client's GIM transcripts, music improvisations in response to these poems and/or poems in response to the music improvisations, Mandala drawing, and the writing of reflective narratives to document the process. All improvisations are audio recorded for music-centered psychotherapy analysis.

Roxanna also noted the "time and energy" needed to create music and to analyze its meaning and the ambiguity of the musical process, which requires strength and resiliency from the researcher. Valery focused on the complexity and time-consuming aspects of coordinating timelines, schedules, and participants, in addition to creating the music and final product. She indicated that the research team,

Worked [in collaboration] with the Department's grant program (designed to increase the number of low-income students who are prepared to enter and succeed in postsecondary education) to identify 40 minority urban youth. We brought them to the campus (...) for a week, and a biologist met with the youth and the rap singer each day in the field. The rap artist created songs about the items of nature the youth encountered. Each afternoon, the youth met in the College's sound studios and broke into groups to create rap songs of

their own to express their encounters with nature. They assembled a CD of all of the songs.

Adalyn's experiences consisted of "weekly session exploring creative application on the iPad tablets," as well as "improvisation exercises, group discussion, and collective creation," with participants having varying abilities due to "injury, stroke, drug use, assault rehabilitation, multiple sclerosis, cerebral palsy, and congenital respiratory disease" which impacted "mobility, physical dexterity, verbal expression, memory, and concentration." Brittany on the other hand described research design/procedural complexities related to interviewing participants across the province, compiling that data for thematic analysis, and using those themes to create a song and music video. These two knowledge translation products were generated with the guidance of an Indigenous Elder, two musicians, and 20 individuals who wrote and performed. She also spoke of the difficulties in managing timelines and organizing so many variables, including schedules, locations, participants, researchers, research assistants, elders, and musicians. Keith's experiences involved data collection using interviews and case studies, which then provided information to guide the artistic interpretation. He described the music as being "the backdrop to the [dance] performance", which reflected "the mood of the dialogue and corresponding with the dance."

In addition, all participants reported that expertise was required to use music for disseminating research findings. For example, Adalyn's research experience involved connecting with an employee from the Native Health Services to promote participation, communication, and serve as a cultural consultant liaising the researchers and the Aboriginal participants. She also involved a professor from the university to assist with launching the project, reviewing ethics application, finding funding, and assisting with the iPad technology. Adalyn defined her role as the music therapist and stated that all research members participated in the improvisation sessions as musicians and researchers, along with voluntary post-secondary students, long-term care providers, and Indigenous cultural persons.

Other participants commented on the number of experts involved. For example, Brittany wrote that there were 20 participants involved in writing and performing the song and music video, while Alan explained that one or two composers were needed in any musical composition, however several other individuals could be involved in future research projects including scientists, engineers, musicians, and artists. Valery described her research as involving three

team members: a director, a music leader, and a logistics coordinator as well as three biologists and a professional rap singer. Keith's research involved one choreographer, one composer, eight dancers, and a research team, while Claire worked with a multidisciplinary team of three researchers and five musicians/clinicians.

The importance of involving experts when using music to disseminate research was underscored when Brittany voiced the need to “connect with the experts” and “develop songs with individuals who have the talents and expertise to do so” and echoed by Roxanna who stated how essential it is to “work with a qualified musician and, ideally, a music therapist-researcher who is current with her/his skills, knowledge and attitudes as a therapist, performer, and researcher.” From the participants' responses it was evident that using music to disseminate knowledge is incredibly resource intensive. It takes time, people, and money to conduct this type of research which culminates in complexity.

### **Music is acceptable to use as a Standalone Methodology or Supporting Methodology, yet regardless of the Methodology the Intent of the Research is Fundamental**

During the first round of data collection one participant introduced the idea that music is “simply one tool that can deliver a message.” This comment sparked a question about whether music can be used as a supporting or standalone methodology when disseminating research. Follow up participant's responses endorsed both as acceptable. Adalyn commented that she believes “both positions are valid and [I] do not strongly oppose either.” She mentioned that, “I have used music as a methodology all on its own and have also used it in conjunction with other mediums in order to deliver a message.” Brittany wrote,

I think both are valid [and have used] both with a recent experience. In the past [I] have used just used it as knowledge translation, but in this recent experience we worked with an artist who worked at the facility we were doing research in and he wrote a song based on his reflections of the facility and what we were researching there. We will use it as data.

Alan expressed his opinion by stating that:

Of course, music has both stand-alone and supporting roles. Symphonies, concerto, and chamber works stand alone; film scores or ballet music serve supporting roles. The specific creation of music for a scientific/research purpose is relatively uncommon, although increasing. In one sense, using a scientific topic as inspiration would lead to

absolute music with a theme, maybe enhanced with dance or video. In another context, the scientist and composer could collaborate directly and simultaneously to create a work that is at once inspiring the music and inspired by the music. The true collaborations are rare, and this is an area that deserves exploration in the future – musicians and scientists as true equal partners in creation of new hybrid works.

Keith articulated that he has “composed music for simply aural reception, film, dance, [and] imagery”, and:

Naturally all are valid, it depends on the primary medium. If say a piece of music is composed without the association of another medium, that music may be better to stand on its own. The interpretation of music aurally allows the listener to develop her own imagery or context. If one adds, say video imagery after to the song, it will alter the message and perhaps lessen the impact or trivialize the emotional result. If the primary medium is dance or film or theatre, music is the compliment to those mediums.

A few participants emphasized the importance of ensuring that the integrity of the original research was appropriately communicated, regardless of whether music is the supporting or standalone methodology. For example, Adalyn wrote that, “It is important to be clear in the purpose of using music” and “how it is used to represent what needs to be represented.” She continued with the idea that the integrity of the research is fundamental regardless of the methodology by voicing:

The only part of this argument that I have strong opinions about is the idea that a researcher has to be clear in how the final research product is constructed no matter which way you do it, using music as a methodology on its own or in adjunct with another medium. Every part, every note, every scene, every line in the poem, every choreographed movement must be informed or have meaning whether improvised or pre-composed. I guess the contradictory element comes within the element of chance and allowing the freedom of musical creation to speak the truth of the concept. I’d liken it to clinical improvisation, no matter what you’re doing, you need a balance of freedom and structure.

Similarly, Keith believed that regardless of the research methodology used, you must be “authentic and respectful of the subject matter.”

## **Current Ethical Guidelines are Sufficient, however the lack of Ethical Procedures for Knowledge Translation Research is Concerning**

The research participants agreed about the sufficiency of current ethical guidelines for using music in the research dissemination process. However, they also identified further ethical matters that must be addressed, including (a) informing participants that music can evoke strong emotions and memories, (b) the possibility that an Institutions Review Board may interfere with developing effective studies, and (c) there are currently no ethical procedures on how to complete knowledge translation research. Adalyn highlights the first point that participants must be informed about potential emotions and memories that might be evoked:

I think standard research ethical guidelines are sufficient, [however] I think the most important thing to do is make sure you state within the recruitment form that there is a possibility that music may stir up emotions or memories, so that all participants are aware [of the potential risks].

Keith similarly echoed that the current ethical guidelines are sufficient, however he described how it is difficult to protect audience members from feeling strong emotions. For instance, he speaks of his own experience in performing music and stated:

I have composed music that some interpret as meditative and soothing, even creatively inspiring, while others said it was too morose and they couldn't get through it; quite a severe spectrum resulting from the same music. The music was a collection of solo piano pieces thus quite spacious and simple in its delivery. This allowed for wide spread interpretation. Where is the listener at in her life? How will this music affect them at this time? Will they interpret the same music differently under different circumstances?

Keith illustrates the unpredictability and individual differences in emotional state of audience members who listen to the same piece of music. Therefore, it is difficult to enforce strict ethical guidelines when using music to disseminate research because of the ambiguity of the arts. However, it is possible to inform audience members of the potential to experience strong emotions before a performance.

Alan suggested that although he believes the standard ethical guidelines are sufficient, he is concerned about having an Institutional Review Board oversee a music dissemination study:

I would think that having [Institutional Review Board] rule on using music in research would give rise to ineffective studies, albeit better controlled. We are all selecting what

we listen to daily, and music is an everyday choice for all of us. For research connections to be valid, that freedom must be built in to the study design, and not artificially regulated by an external, non-research involved institutional body.

As such, Alan highlights that we cannot protect the audience from emotions that may manifest when listening to music about a research topic because we are all picking and choosing our music every day and must have freedom to design the study to ensure validity.

Brittany agrees that the current ethical guidelines are sufficient, but expresses her concern that there are currently no knowledge translation procedures in place:

I think what we have is fine. I can't see any safeguards that would need to be used with music that we don't already have with oral interviews. The fact that we don't have an ethics process for knowledge translation work though with participants is somewhat concerning.

### **Looking Back to the Research Questions**

These findings can be reconsidered in terms of the following research questions that guided the present study: (a) what characteristics of music make it an effective tool for disseminating knowledge? (b) when is it appropriate to use music to disseminate knowledge? (c) how do researchers and musicians go about using music in research for the purpose of knowledge dissemination?

#### **What Characteristics of Music make it an Effective Tool for Disseminating Knowledge?**

The participants agreed that music can reach a larger audience than traditional research dissemination tools, such as conference presentation, research articles, and book chapters. Music can convey a variety of research topics, sometimes multiple concepts all at once, by telling a concise story, rather than a piece of the story, which often occurs in traditional research dissemination. Music can generate emotional, visceral, and embodied responses. Music can create connections between individuals through a shared experience. Music provides a way to express knowledge or ideas either differently or, in some circumstances, better than language because music is emotional and universal to all humans.

Taken together music has exceptional ability to transport research outside of the academic realm and to the general public. Music can transcend traditional means of obtaining knowledge, such as conference presentations, journal articles, book chapters, etc., by allowing

audience members to engage with the research and research participants through the sharing of emotions and experiences. Music allows the audience members to feel a personal connection to the research participants by sharing in their story and experiencing their emotions. In turn, by experiencing the emotions of the research participants the audience members are more apt to understand the true meaning and ideas that are being conveyed in the research. Music has the ability to capture what is difficult to express in words. The expression of emotions through music occurs through lyrics, but is also expressed through tone, rhythm, tempo, dynamics, harmony, and key of music. It is a combination of all these features that allow us to feel the emotions in music. In essence, music can communicate research knowledge differently than conventional research and allow people to experience and understand research in a different way.

### **When is it Appropriate to Use Music to Disseminate Knowledge?**

The participants reported that with creativity music can be used for all research projects, for example, add something in conjunction to the numbers and graphs in quantitative research. Participants also agreed that using music for the purposes of knowledge dissemination is complex, time-consuming, that requires expertise. Due to the complexities associated with using music to disseminate information (e.g., coordinating schedules, funding, time, people, venues) researchers should consider whether this medium is appropriate to use to disseminate their research findings; that is whether they have the appropriate resources required to conduct such research.

### **How do Researchers and Musicians go about using Music in Research for the purpose of Knowledge Dissemination?**

Participants communicated that there was no singular procedure for using music to disseminate research findings, although participants agreed that some sort of step by step process should be implemented when using music to disseminate research. Thus, it is important that the research project is well thought and planned out, drawing on the expertise of many. The expert participants agreed that music is acceptable to use as a standalone and primary methodology or as supporting methodology, which can be used to enhance visuals, dance and movement, or spoken dialogue. However, regardless of whether music is a supporting or primary methodology it is important to stay true to the original message being communicated. The participants also agreed that using music in research is not a one-person research project and several experts from

different disciplines are needed. Participants reported that the current research ethical guidelines used for music in research are sufficient.

## **CHAPTER FIVE: DISCUSSION**

This Delphi study was conducted to explore music as a medium for knowledge dissemination by systematically accessing and synthesizing the knowledge of researchers and musicians who have used music as an artistic method to disseminate research findings. Three questions guided this research: (a) what characteristics of music make it an effective tool for disseminating knowledge? (b) when is it appropriate to use music to disseminate knowledge? (c) how do researchers and musicians go about using music in research for the purpose of knowledge dissemination? The purpose of the following chapter is to summarize the key findings of this study and integrate these results with existing literature. The chapter concludes with a discussion of the strengths and limitations of the study and implications for future research and practice.

### **Summary of Findings**

Seven participants were involved in a two-round online Delphi study who self-identified as either researchers, musicians, or both and had expert knowledge and experience on the use of music as a tool to disseminate research findings. In discussing their research experiences using music, a consensus emerged amongst participants in the following areas: (a) music can reach a larger audience than traditional research dissemination methods, (b) music can convey a variety of research topics, sometimes multiple concepts all at once, by telling a story, (c) music evokes emotional, visceral, and embodied responses and creates connections between individuals through a shared experience, (d) music provides a way to express knowledge or ideas either differently or, in some circumstances, better than language because music can create interest, is emotional, inspiring, and universal to all humans, (e) music is valid and acceptable to use for all research projects with no singular procedure existing, (f) using music for the purposes of knowledge dissemination is a complex, time-consuming, and requires expertise, (g) music is acceptable to use as a standalone or supporting methodology; regardless of which methodology used, the integrity of the research is fundamental, and (h) finally, the current research ethical guidelines used for music in research are sufficient, but no ethical procedures for knowledge translation research exists.

## **Integration of Results with Existing Literature**

The present study consolidated the current status of knowledge about the use of music in research dissemination and suggested promising directions for the next steps in this area of research. The following section explores the commonalities of the study's findings with the existing literature as well as findings not addressed in the current literature.

### **Findings Confirmed in the Literature**

**Research for a larger audience.** The results from this study found disseminating research through music allowed for the information to be accessible for a larger audience, including the general public. The existing literature confirmed this idea. For example, Gadanidis and Borba (2013) stated that the purpose of using songs and music videos, which was shared publicly through Youtube, live performances, and broadcast media to disseminate mathematical concept learning and understanding was so the information could reach the target audience of elementary students, teachers, parents, educational organizations, and the public. Gadanidis and Borba (2013) suggest that “it is not easy for academics to communicate with audiences outside of the scholarly community” (p.32) and using songs and videos that are shared publically has helped to spread our research findings with non-expert audiences. They state that sharing mathematics education through songs with students, educators, parents, and the public makes the research more tangible and can provide deeper insight into mathematics. They also emphasized that using song and video allowed students to share their learning with their family when they were asked “what did you learn at school today?” Parallel to this point, the Mental Health Commission of Canada (MHCC, 2015) proposes that music can engage potentially new audiences, because it is attention-grabbing and a new and exciting means to learn. The MHCC (2015) also suggest that using music to disseminate research can reach marginalized populations and can connect with those potentially learning challenged, such as those with low literacy.

**Create connections between individuals through a shared experience.** Participants in the study expressed that music could create a connection between fellow participants, as well as between the participants and researcher(s) by sharing in a musical experience. These results were confirmed in the literature. For example, Beer (2013) described this idea in her doctoral dissertation. She explained that using music was an important part of expressing the research data because it creates a tailored image of the participants and gives them a voice. She argues that by expressing the data with music it achieved two goals: (a) “it liberated the information

from the personal sphere and placed it in a universal realm of shared experience, and (b) gave the reader a sense of what it was like to be this person” (p. 5). Therefore, music allows the audience to feel a stronger connection and gain a better understanding of the research by connecting the data to an individual. Using music in research allows the audience to connect with the participants and understand and feel empathy for them. Dell et al. (2014) expressed a similar idea that music could create connection between individuals through shared experiences during their follow-up research for the song and video *From Stilettos to Moccasins*. Dell and colleagues collected feedback from comments posted on Youtube and following the delivery of the song and video at service provider workshops and treatment client workshops. They argue that the women and service providers were able to connect to the content of the song because of their personal experiences. For example, several participants commented that “I felt like [the song] was written about me (I’ve worked the streets since I was 16),” that the music video was “Singing my song,” “It reminded me of my healing journey. I could put myself in her place,” and “This song is real. It touches you when you’ve walked the walk” (Dell et al., 2014, p. 14). Therefore, Dell and colleagues found that music was able to touch participants on a personal level because it was relatable and could connect them through a shared experience. Other authors, such as Greenberg, Rentfrow, and Baron-Cohen (2015) stated how engaging in music can allow audience members to connect to the story of a person, character, or musician and gain an understanding of how they are feeling.

**Music provides a way to express knowledge or ideas differently by creating interest, being inspiring, and accessing human emotions.** The results from this study found disseminating research through music allowed for a different way of expressing information by creating interest, being inspiring and exciting, and tapping into human emotions. Gadanidis and Borba (2013) reflect and describe their experience using song and video to disseminate students mathematical understanding and learning. Gadanidis and Borba described the importance of creating “good math stories” (p. 33) that are represented through song and video in order for students to “have the opportunity to see connections, to be surprised, to sense beauty, and to connect emotionally to mathematics” (p. 34). They developed their definition of a good math story by studying and paraphrasing Boorstin’s (1990) criteria for what makes a good story in a movie and describe a good math story as: (a) “the pleasure of experiencing the new, the wonderful, and the surprising in mathematics; (b) the pleasure of experiencing emotional

mathematical moments (either our own, or vicariously those of others); and (c) the visceral pleasure of sensing mathematical beauty” (p.33). In their project students experienced these qualities of good math stories by incorporating three components into the teaching: (a) big math ideas, (b), mathematical performance, and (c) children’s literature. For example, in the song and video “Math Trains” first and second grade students were able to engage in the big math idea of linear functions by explore growth patterns by using linking cubes to create, extend, and compare patterns and by using bingo dabbers to represent the growth patterns as a bar graph. The students noticed that part of the patterns stayed the same and other parts varied, specifically in terms of height and steepness. Although the students were not aware of it, they were creating graphs, identifying and comparing patterns, and learning about constants, variables, and slope.

Gadanidis and Borba state that by teaching big math ideas through learning activities that have a low math floor and high math ceiling, it gives students the opportunity to extend their thinking beyond their grade level and engage in more complex ideas. Gadanidis and Borba also highlight that students performing their math learning through song and video addresses multiple learning styles, reinforces mathematical relationships and insight, helps students appreciate that math is like other deeply human experiences which can be celebrated through song, and adds fun to learning. The authors also suggest that by the songs being presented as “good math stories” it helps students engage with the information both emotionally and cognitively and helps show that math developed out of human experiences.

Dell et al. (2014) echoed a similar idea in their follow-up research to the song and video *From Stilettoes to Moccasins*. Dell et al. (2014) argue that music can express information differently because it creates interest and is inspiring. For example, in the workshops where the song and video were presented several service providers commented that they would use the song for inspiration and educational services. Specifically, one service provider stated, “The song is inspiring and something that I can use,” while another said, “I remember the song because it was different. I have never heard a song like that before. I found it was very empowering” (Dell et al., 2014, p. 16). As such, Dell and colleagues’ research suggests that music is a powerful means to translate research as it allows for information to be expressed differently because it creates interest and is inspiring. Other scholars, such as music psychologist, Dr. Vicky Williamson (2013), argue that music allows for new understanding of information and the ability to retain new information because we attach emotions to this

information. She states that when we process new information we often attach our emotions to this event, which can create lasting memories. Dr. Williamson argues that music is often associated with important events in our life and carries a degree of emotional attachment. Our emotions help us code a memory and when we hear that music again it can trigger a particular emotion. Thus, music allows for a new understanding of information because we attach emotions to music.

**Music in research is complex, time-consuming and requires expertise.** The results from this study found that using music for the purposes of research dissemination is a complex and time-consuming process that requires expertise. This is consistent with the existing literature. Beer (2013) describes and reflects on her experience using music to disseminate her qualitative research from her doctoral dissertation on the role of spirituality in the work lives of higher education administrative leaders. Her research procedure initially involved conducting a series of interviews with highly ranked administrators at a mid-size university and then using a variety of creative methods to access deeper levels of the experiences they shared. Beer, a music therapist with advanced training in clinical music improvisation, then used her keyboard, violin, and Native American flute to create a musical composition based on the participants' interviews, body language, speech rhythms, and tone. Some of the difficulties derived from the researcher's experience using music to represent the participants and disseminate research included the complexity and time-consuming aspects of this task. Beer (2013) stated, "Though the inspiration came quickly, its enactment was not easy...and [was] extremely demanding and labour intensive" (p. 5). She reflected on her need to practice for countless hours to ensure she is not out of pitch and to enhance the clarity and creativity of the process and reiterated the time-commitment needed by stating, "there is so much to do, so much to pay attention to, yet I can only tackle one at a time and then fit it all together into one coherent piece" (p. 4). Beer (2013) expressed that the researcher must take care to ensure the music is a carefully stylized representation of the participants' voices, scenes, and artifacts gathered through systematic, disciplined, and closely monitored research methods. Beer (2013) describes the creative process as being in a heightened creative awareness where you are "concentrating on the participant's words, movements, sounds, environment, gestures, silences, and expressed emotions" (p. 5).

Beer (2013) also reflected on the need for expertise when using music to disseminate research:

I strongly caution other researchers who consider taking this path to be realistic about their capacity for such work, for my ability to do this is based upon over 24 years of professional music therapy work and decades as a performer of music improvisation pieces. This work is ... built upon theory, experience, and knowledge (p. 3).

**Intent of the research is fundamental.** Several participants communicated that researchers must ensure that the aim of the research remains unchanged when using music to disseminate research. The existing literature has similar conclusions. For example, Beer (2013) spoke of the importance of ensuring the participants' message remains unaltered and does not get lost in the process of using music to communicate participants' responses. Beer (2013) reported the need to be aware of your own interpretations of the research data and to separate your own thoughts, feelings, and reactions from those of the participants. She explained her processes by stating:

I was mindful of this need throughout the process of creating music, for I knew the music I heard in my head as aurally representative of participants had to be filtered through my own musical skills, preferences, and abilities. I also needed to constantly monitor my own reactions and acknowledge intuitive understandings.

**Unique features of music.** The results of this study identified several unique features associated with music, which were found in the existing literature. First, the participants in the present study believed that music can convey a variety of research topics, sometimes multiple concepts all at once, which can tell a story. These perspectives are consistent with the existing literature. For example, research topics which were cited in this study's literature review that identified the unique features of music included human emotions research (Sloboda, 1991), the crucifixion of Jesus (Wolff, 2000; Ferrari, 2012), teaching cultural awareness, including African American culture, ("Chelsea Green", 2013; Ilari, Chen-Hafteck, & Crawford, 2013), communicating social messages and knowledge (Kingman 2003), HIV/AIDS research (Bastien, 2009), the Declaration of Human Rights (Daykin, 2004), domestic violence and abuse (The Aboriginal Healing Foundation Research Series 2012), spirituality and administrative leaders (Beer, 2013), learning mathematics (Gadanidis & Borba, 2013), music therapy in cancer support groups (Rykov, 2008), recovery themes and mental illness (Vander Kooij, 2009), and decolonization and healing from drug abuse (Dell et al., 2014). The research topics covered in the literature review also spanned the disciplines of health research (Bastien, 2009), education

(Gadanidis & Borba, 2013), and humanities (The Aboriginal Healing Foundation Research Series 2012). The findings from the present study expanded on our knowledge of the disciplines that are using music to disseminate research and now include the fields of biochemistry, biology, chemistry, medicine, geology, and climate change.

Within in the existing literature, musicians and scholars have used music to tell stories. Leavy (2009) suggests that the arts can tell compelling, heart wrenching, and meaningful stories, which can grab people's attention in a powerful way. John Surman, English saxophonist and composer, and Jack DeJohnette, American Drummer, used song and music to tell the story of the United Nations 1948 Universal Declaration of Human Rights in their album *Free and Equal* (Daykin, 2004). The musicians used woodwinds and brass to represent two opposing voices regarding the troubled world politics (Daykin, 2004). Furthermore, music and song have been a strong oral tradition in Indigenous culture to share knowledge through storytelling. For instance, the Plains Cree use ceremonial songs in their sweat lodges to pray, to connect to the Creator, and to share their values and beliefs (Kingman 2003). In their research on Aboriginal women healing from drug addiction, Dell et al. (2014) argue that healing requires giving voice to Indigenous women and allowing them to tell their story.

Secondly, the participants in the present study agreed that music has the ability to evoke emotional, visceral, and embodied responses. Similar discussions appear from scholars in the existing literature. For instance, Piercy and Benson (2005) describe how the arts can be moving and evoke strong emotions, which can bring research findings to life. Similarly, Woo (2009) suggests that the arts in research can provide researchers and audience with new insights, knowledge, and practice about a topic through by provoking emotions. Boydell et al. (2012) described the arts as being able to inform and enrich the research process by encouraging individuals to connect with research on a personal and emotional level. In relation to music, Bruscia (1998) argue that music and songs are a way for us to express an assortment of emotions, including sorrow, joy, and fear, while Sloboda (1991) suggests that music allows for an increased intensity in emotional responses that is rarely felt in everyday life, including thrills, laughter, and tears. Furthermore, he argues that the majority of individuals enjoy listening to music because of its ability to evoke strong emotional responses. Baker, Kennelly and Tamplin (2005) point out that music is useful in therapy as it helps clients' processes and evokes powerful emotions. They also suggest that song writing can successfully uncover hidden feelings and

allows for the expression and release of emotions. Baker and Wigram (2005) propose that music allows an audience to become aware of their emotions, while at the same time serving as a means to release them. Other authors, such as musicologist and arranger, Christoph Wolff (2000) argue that music has the profound ability to evoke strong emotions within one piece of music. For example, in Johann Sebastian Bach's St. Matthews Passion the Recitative creates an emotional atmosphere of sorrow, suffering, hope, and redemption, which reflects Jesus' fate of crucifixion, while the Aria creates an emotional atmosphere of joy (Ferrari, 2012).

Third, the participants in the present study were unanimous in their belief that music is acceptable to use as a standalone or supporting methodology. Throughout the existing literature researchers have used music to disseminate their research findings, either as a standalone methodology or as a supporting methodology. For example, Gadanidis and Borda (2013) used music as the primary strategy to disseminate their research on elementary students' knowledge about mathematical concepts. Several of the researcher's songs are accompanied by video, although the songs are often presented without the use of the video. For instance, children present only the songs when communicating with their parents what they have learned at school. Furthermore, songs are performed at Math Concerts for schools across Ontario and the songs are presented at conferences and workshops. The use of music and video emphasizes a shift away from text-based education to a multimodality approach, where meaning can be made in many different ways (Gadanidis & Borba, 2013). Similar to this, Dell (2011) and a team of colleagues used music as the primary methodology and video to disseminate research on embracing Aboriginal cultural identity as a way to heal from drug addiction in the song *From Stiletos to Moccasins*. Music was chosen as the medium to disseminate research because it holds a historical significance in communicating knowledge among Aboriginal peoples (Dell, 2011) and is recognized as a sacred form of Indigenous knowledge (Sefa Dei, Hall, & Rosenberg, 2002 as cited in Dell et al., 2014). Other scholars, such as Laura Beer (2013) used music as a standalone methodology to present her research on the role of spirituality in the work lives of higher education administrative leaders. Cynthia Vander Kooij used music as a primary methodology to present her findings on the recovery themes in the song writing of adults living with mental illness, while Mary Rykov wrote the song, *We are the Melody*, as a standalone methodology used to represent the meaning of a music therapy support group for adult cancer patients.

Researchers and musicians have also used music as a supporting methodology. For instance, a piece of music can be heard in the introduction monologue of the drama production, *I'm Still Here*, which was created to reduce the stigma and judgement surrounding dementia. The music serves as the backdrop and helps set the tone for the emotions which might be felt during the performance. For example, during the opening scene two actors appear on stage, one portraying an elderly woman with dementia and the other portraying the daughter of the woman. The two are embracing one another and the daughter appears to be comforting the woman. The atmosphere of the scene is of love and comfort and the music heard during this time reflects these emotions. In the next scene the elderly woman is standing alone and rubbing her hands, while looking sad, disorderly, and frightened. The soft piano melody in the background helps set the emotional atmosphere of sorrow, confusion, and fright. Similar to this, music can be heard throughout the dance performance *Hearing Voices*, which raises awareness about early psychosis in teenagers. Canadian musician, Tim Isherwood, composed music for the dance performance inspired by transcript data, case studies, discussions within the research team and the dances, and video footage of the rehearsals. The processes of creating the music focused on creating sounds that reflected the choreography (Boydell, 2012) and the emotional tone of the performance. Boydell (2012) reflected on the dance performance and stated that it provided the opportunity for emotions to be observed through body, gestures, music, and voice. Musical compositions can also be heard accompanying such dance performances as *Ghosts of Violence* (<https://www.youtube.com/watch?v=9LPrBWfx4vg>), which raises awareness on spousal abuse, and *Silent Survivor* ([https://www.youtube.com/watch?v=04WH\\_Ad9anw](https://www.youtube.com/watch?v=04WH_Ad9anw)), which tells the story of Indian Residential schools.

Finally, the expert participants supported the idea that no singular procedure exists when using music to disseminate research. Specifically, the participants disclosed using a variety of methodologies to interpret their data, including mixed-methods, arts-based, interviews, and case studies. It was also suggested the processes of creating the music for dissemination can happen in two ways; either adding the science after the music or de novo, meaning conducting the research and developing music from this research. The idea that no singular procedure exists was confirmed in the literature. For example, Gadanidis and Borba's (2013) research process included using a combination of arts-based approach, including using drawings and comic strips, and dialogue written by the students to generate data. The data was transformed into lyrics by

George Gadanidis and music was developed and performed by a group of musicians. Laura Beer (2013) also used an arts-based approach to disseminate her research findings. Beer's research process involved interviewing one participant on three occasions and with the data created a portraiture, which involves weaving together quotes, observations, and impressions of the participant. Beer also created poems based off of her impressions of the participant and stories shared. Following the interviews Beer analyzed and reflected on the portraitures and indicated she "heard a certain musical interval in my mind and a melody playing over it. The interval was a perfect 5<sup>th</sup>... the melody was slow and measured" (p. 8). She describes playing the melody on her violin and then presenting her participant with the musical melody upon their last visit to ensure the participant felt the melody was an accurate reflection. Beer took into consideration that her participant had a great love for the Native American flute so she decided to incorporate it into the final product.

Dell and colleagues' (2014) research process first involved interviewing Aboriginal women who have struggled with criminalization and drug abuse. Key themes of stigma, healing, and identity emerged. These themes were used to develop a song using a collaborative team approach which included Woodland Cree singer and songwriter Violet Naytowhow, the women who had been interviewed, researchers, treatment providers, Elders, policy makers, and government and non-government decision makers. Violet initiated the song development process by introducing song writing to the team and sharing different genres of music. The song writing process involved dividing four groups to brainstorm lyrics, which was facilitated by individuals who were familiar with song writing processes, which took roughly three hours. The groups then reconvened and combined the lyrics, which was followed by how the song should be framed (e.g., using traditional drumming, an Elder speaking, children laughing). Once the lyrics and song structure were developed, Violet and guitarist, Kevin Joseph, worked on adding melody to the song (Dell et al., 2014).

Mary Rykov (2008) describes her research process as involving creating lyrics based off of observations, feedback, and journal entries from seven sessions of a cancer support group. She also describes borrowing three song sources, *The Song is Ended (But the Melody Lingers On)* by Irving Berlin, *This Little Light of Mine*, and *Hard Times Come Again No More* by Stephen Foster, to help create the melody of her song, *We are the Melody*. Finally, Cynthia Vander Kooij's (2009) research process involved analyzing 17 songs written by participants

suffering with serious mental illness. She also used interviews and other creative methods, such as poetry, music, and visual arts to enhance her analysis of the participants' songs. Through her analysis of the songs, interviews, and other creative methods themes began to emerge which allowed her to develop a final written song that incorporated these themes.

### **Findings Missing in the Literature**

The idea that music is a valid and acceptable medium to disseminate research in any research project does not explicitly appear in the existing literature. The current literature does not seem to investigate or report on whether music can be used in both qualitative and quantitative research projects. However, the participants in the present study agreed that music can be used for any type of research project, but ultimately depends on the creativity of the researcher and participants involved. As mentioned in Chapter 4, using music could potentially be used to acquire more in-depth data and experiences. For example, music may be able to provide a deeper insight into the data by allowing the audience to feel an emotional connection to the data. In turn, the emotional connection could reveal a deeper understanding of the participants' experiences. One participant, Adalyn, suggested that in heavily quantitative studies music might not be as relevant, but could communicate more than just the numbers. However, Alan has suggested that music is a highly effective approach in disseminating quantitative research, specifically through the process of data sonification. Data sonification is the process of turning quantitative research data into music. Data are mapped to musical notes, with higher numbers representing higher pitch and lower numbers representing lower pitch. As suggested by Alan, data sonification has the ability to communicate subtle changes in data, such as weather patterns due to climate change. Currently sonification is being applied to complex quantitative data sets, like earthquakes, solar radiation, and simulated particle collisions. Sonification can help understand data, especially in areas where a visual representation of the data would be overwhelming or difficult to interpret (Frazier, 2013). As research participant Brittany suggested, with creativity music can be used to disseminate all research projects, however, as Roxanna points out, it is essential to have professionals with knowledge of performing music.

Current ethical procedures and guidelines regarding the use of music to disseminate research also does not appear in the existing literature. The participants in the present study agreed that the current guidelines for ethical practices were sufficient for using music in the research dissemination process, however, as previously mentioned, three different opinions on

ethical matters emerged, including (a) the need to inform participants that music can evoke strong emotions and memories, (b) the possibility that an Institutions Review Board may impede the development of effective studies, and (c) that there are currently no ethical standards specific to knowledge translation research on how to complete knowledge translation research. The perspective articulated by Adalyn was that researchers should “state within the recruitment form that there is a possibility that music may stir up emotions or memories, so that all participants are aware [of the potential risks].” Keith describes the unpredictability and individual differences in emotions that participants may experience when listening to the same piece of music. For example, one individual described Keith’s music as “meditative and soothing” while another described the same piece as “too morose” and “difficult to get through.” Keith stated that how a person will interpret the music depends on where the listener is in their life and the potential for the music to be interpreted “differently under different circumstances.” Both researchers expressed the idea that music can evoke a range of strong emotions, but how the participant interprets the music may depend on what is currently going on in their life or what memory the music might spark. Researchers may not be able to anticipate how the participants might interpret the music, the emotions or memories which might be stirred, however they can inform participants during the consent process of the potential to experience strong emotions or uncomfortable memories.

Alan voiced that he is skeptical of having an Institutional Review Board oversee a music dissemination project because it might “give rise to ineffective studies.” He states that “we are all selecting what we listen to daily,” “music is an everyday choice for all of us,” and “that freedom music be built into a study design and not artificially regulated by an external, non-research institutional body.” Such an idea is suggestive that for research to be valid researchers must have the freedom to design and carry out the music research project as they see fit because we are all choosing what we listen to with the understanding of how the music might impact their mood. If music dissemination projects are to effectively translate research and remain valid they must allow participants to experience the full potential of the music, which may include negative emotions or memories. Therefore, it is important to inform participants of the potential to experience strong emotions or memories during the consent process.

Finally, Brittany expressed her concern that there is currently no “ethical process for knowledge translation work,” an idea was stated previously in McCaw’s (2013) thesis on using

dance to disseminate research. McCaw (2013) conducted a literature search to determine whether ethics boards have added ethical considerations for knowledge dissemination using the arts in research, however found no information on the topic. She also contacted her university ethics board which confirmed that they do not have special considerations, application forms, or procedures for knowledge dissemination when using the arts. The lack of ethical procedures and guidelines for using the arts to create and disseminate research is of growing interest (Boydell et al., 2012). Due to the growing ethical issues and debates surrounding the current practice in using the arts to create and disseminate research a workshop was held in Toronto, Ontario, Canada to address the types of ethical challenges which researchers and artists have encountered while conducting arts-based research. Five key issues emerged during the workshop: (a) authorship/ownership of the work, (b) truth, interpretation and representation, (c) informed consent/anonymity/ confidentiality, (d) dangerous emotional terrain, and (e) issues of aesthetics. Authorship and ownership concerns included questions regarding “what are best practices when deciding who takes the lead in creating different kinds of project outcomes,” “what are the authorship/ownership issues encountered in the use of various art genres,” and “who ultimately owns the work” (Boydell et al., p. 7). One participant shared that according to their university’s legal department, after an artist has been granted permission from a researcher to artistically engage with the research data the artist owns the rights of the artistic research finding (e.g., musical piece, theatrical performance, poetry, etc.). This information reflects the need for safeguards to protect participants (Boydell et al., 2012). Other concerns arose regarding the interpretation and representation of artistic methods used to disseminate research due to the ambiguity of the arts and potential for multiple meanings to be generated. Workshop participants discussed questions of “how much discretion should be given to artists in their interpretation of research messages,” “how do we deal with different interpretations of data by artists and researchers,” “can researchers challenge the artist’s interpretation of data,” what are the potential risks of misrepresentation,” and “what are the ethical implications of different interpretations?” (Boydell et al., 2012, p. 8). These questions suggest the importance of clarifying the roles and responsibilities and degrees of autonomy that characterize research relationships (Boydell et al., 2012).

Participant consent, anonymity, and confidentiality were identified as topics that needed further ethical consideration. Workshop participants were concerned about the potential of

participants being publicly identified due to resemblance in an image, piece of poetry, or song lyrics, or through explicit co-authorship, thus anonymity and confidentiality could not be guaranteed. Some workshop participants pointed out that some research ethics boards demand total anonymity, which can complicate arts-based research projects. Participants also cautioned against overemphasizing the need for anonymity/confidentiality and the need to protect participants. Although participants may be perceived as vulnerable or marginalized it does not necessarily mean that confidentiality is required. For example, if the research purpose is to empower individuals and provide an outlet where they can speak to the community, then to demand anonymity would contradict that goal. Workshop participants suggested that there is a need to discuss when anonymity and confidentiality are required and this must coincide with the goals of the research (Boydell et al., 2012). Workshop participants also commented on the potential for the arts to evoke strong emotions, or to tread on dangerous emotional terrain, that could potentially be troubling, unsettling, and disturbing for the research participants. Several arts-based research projects focus on communicating health issues in an embodied and representational manner that can result in uncomfortable or unexpected feelings, which can be perceived by research ethics boards as demanding or too risky. Workshop participants commented that research ethics boards are often ill-prepared to examine protocols where the emotional risks of a participant are unknown. Other workshop participants were concerned with whether audience members should be aware in advance of the emotional effects the artistic work could have for them, while others commented on the potential for harm to the performers who engage in arts-based research (Boydell et al., 2012). Finally, the workshop participants raised the notion of the aesthetic component of arts-based research and the problem of evaluating what is “good art” and who gets to determine this. This highlights the problem of judging the quality of art which is based on complex human experiences and the potential for the research participant(s) to feel vulnerable due to people judging the artistic work. The participants of the workshop believed that these topics required “critical scrutiny” (p. 13) in order to remake research ethics guidelines to effectively accommodate art-based research (Boydell et al., 2012). The workshop facilitated in the preparation for a grant proposal which focused on these ethical challenges with the hope of informing new research ethics policies.

### **Strengths of Current Study**

Several strengths were present in this study. This study addressed the lack of research which has been conducted using music as a tool for knowledge dissemination. This study was able to gain meaningful insight from researchers and musicians who have used music as a tool for disseminating research findings. In particular, it was found that music can be used for all research projects, including qualitative and quantitative studies. Therefore, researchers in any field of research should consider straying from the typically research dissemination path of articles, conference presentations, and book chapters, and challenge themselves to take on the medium of music to translate their research. Another strength is that music can be used as a standalone and supporting methodology. As such, researchers can see the unlimited potential to use music in their research, whether they choose to highlight their research in music as the primary methodology, or they use another artistic medium to convey their research and use music as the supporting methodology. Whichever chosen methodology researchers should ensure that the integrity of their research is not compromised and that music serves to enhance the objective of their research.

One finding that was of particular interest is that music has the potential to evoke strong emotions and stir memories, therefore participants must be informed of this risk before engaging in the research. This potential risk should be clearly identified in the potential risks and benefits section of the consent form, which is currently best practice, prior to audience members engaging in music dissemination research. Another area of interest and potential strength is there are currently no ethical guidelines on the use of the arts, and music, for the purpose of knowledge translation. As previously noted, McCaw (2013) could find no ethical considerations for knowledge dissemination using the arts in research, while Boydell et al., 2012 identified five areas of ethical debate during a workshop which explored ethical challenges when using the arts in creating and disseminating research. Currently there appears to be no ethical standards for using the arts, and music, for the purpose of knowledge translation, although it is a topic which both researchers and artists address as necessary to explore. I hope that this study, McCaw's research, and the current research being completed by Boydell et al., (2012) will encourage other researchers and ethics boards to explore the development of an ethical guideline for researchers and artists who are using the arts to carry out knowledge translation research.

Another strength is that the participants were all educated and experienced researchers or musicians who had used music to disseminate research findings. Four of the participants were lifelong musicians, one participant was a professional composer/musician, three participants were both researchers and musicians, and two participants had no formal musical training. Having all of these experiences as a researcher and musician added to the breadth and depth of the data obtained through the Delphi method. For instance, all of the participants were able to speak about music itself (i.e., unique features of music) which is knowledge that is anchored in their experience of music. As someone who has musical experience I believe that music has gifted me a different perspective of how I connect, learn, and understand myself, others, and the world. Since the participants have also experienced music they also bring a different perspective from their own experience of music. All of the participants' experiences as either researchers, musicians, or both add to the richness, credibility, and quality of the data obtained.

Finally, my supervisor's experience and expertise in music therapy and qualitative research and my personal connection to music as a former musician enhanced the quality of my data. My personal experiences as a musician provided me knowledge about the emotional, visceral, and embodied connection I have experienced while performing and listening to music. This understanding of music helped me to better understand the participants' experiences with music, which contributed to the rich understanding of the data.

### **Limitations of Current Study and the Delphi Method**

There are three key limitations to the current study: two limitations of the study and one limitation of the Delphi method. First, the small sample size of seven participants potentially restricted the richness of the findings. Although there are no hard and fast rules on the number of participants required in the Delphi method, a sample between ten to fifteen participants can yield sufficient results (Skulmoski et al., 2007). However, there is a limited number of individuals currently using music to disseminate research which makes it difficult to gain optimal data. A larger sample size would have provided a broader picture of the use of music to disseminate research findings, however there are currently few researchers and musicians involved in this type of work. Thus, there was only a small population of researchers and musicians to recruit. In order to access a larger participant pool, it may be necessary to allow more time for this area of research to develop and expand, which is something I am confident

will flourish as all participants were passionate about their research and the prospect of more researchers utilizing the arts to disseminate research.

Secondly, recruiting individuals who have expertise in the field of music dissemination (e.g., researchers and musicians) was both a strength and a limitation. As noted, the participants were either professors at post-secondary institutes, working in health facilities, or self-employed. Consequently, they have limited extra time to volunteer and participate in research projects because of their busy and demanding professional lives. The lack of time available to participate was evident as a number of potential participants informed me of their interest in contributing to the research, but having too many prior commitments.

Lastly, the Delphi method offered one main limitation. The online questionnaires used with the Delphi method in this study prevented my ability to use in-the-moment interview strategies to clarify their answers, probe participants' responses, and elaborate on the knowledge they presented.

### **Implications for Future Research**

This research was unique in exploring music as a medium of knowledge dissemination by systematically accessing and synthesizing the knowledge of researchers and musician who have used this particular artistic method. The literature reviewed identified a lack of research regarding music for the purpose of knowledge dissemination of research findings. Only a few researchers have conducted studies that used music to disseminate research findings and, until this present study, this accumulating knowledge had yet to be systematically integrated. In the current study participants expressed opposing ideas about music's ability to create or break down barriers. For example, some participants believed that music could break down barriers that might exist between the researchers and participants involved in a study because music can stimulate interest in a topic and can decrease the power imbalance between researchers and participants. Other participants were cautious to conclude that music could break down barriers and commented that multiple factors, such as background, history, race, gender, social class, etc. of the participants and researchers could all influence barriers. Furthermore, participants expressed how musical prose and genre can influence the reception of music as every individual has their own genre preference. Future researchers may wish to explore whether different aspects of music can influence barriers.

Participants in the current study also expressed differing opinions on the level of unpredictability that occurs when using music in research. For instance, some participants believed that music is unpredictability and the unpredictability occurs in the actual creating of the music and now knowing where the musical process will end up. Other participants believed that using music in research is predictable, especially if you are adding music to pre-existing data, because the researchers are ultimately in control of what musical piece they choose to express the research. The opposing ideas regarding the amount of control that researchers and musicians have in the research process is an interesting topic to explore. Future researchers may wish to explore whether different research topics, research methods (qualitative versus quantitative), field of study, or characteristics of researchers and/or musicians influence participants' perspectives of how much control researchers or musicians have over the musical research process.

In the current study, participants believed that current ethical standards are sufficient, however three different opinions on ethical matters emerged, including (a) the need to inform participants that music can evoke strong emotions and memories, (b) the possibility that an Institutions Review Board may give rise to ineffective studies, and (c) that there are currently no ethical procedures on how to complete knowledge translation research. Future researchers may investigate to what degree researchers must inform participants of the potential risk for experiencing negative emotions or memories and whether this is beyond what a participant may experience on a day-to-day basis. Future researchers may also choose to investigate whether an Institutional Review Board could compromise studies when it comes to using music for the purpose of research dissemination. Researchers could potentially solicit the opinions of researchers who are currently using the arts to disseminate research. Finally, ethic boards have not yet developed an ethical procedure and guideline for how to complete knowledge translation research. A next step in future research could be taking this study's findings under consideration with the goal of creating a guideline for using the arts to disseminate research. As noted by Boydell et al., (2012) this guide could include consideration on ownership, interpretation and representation of the artistic work, informed consent/anonymity/confidentiality of the participants, treading on dangerous emotional terrain, and issues of aesthetics. Future research is needed in this area to provide appropriate guidelines.

### **Implications for Research Practice**

The findings from the study are relevant to researchers interested in using music to disseminate research findings. First, researchers should recognize that using music to disseminate research is a complex and time-consuming process that requires the need to connect with the experts, such as those with the talent, skills, and knowledge required to create music and any other professionals needed to facilitate the musical process and/or guide the research. Thus, this research dissemination strategy is resource intensive and requires time, energy, people, and money. Similarly, researchers considering undertaking a music dissemination project should be prepared and willing to collaborate with a number of individuals, including participants, and act as a team member. Second, researchers should be aware that audience members may exhibit strong emotional responses and memories during the musical performance. Researchers should inform their audience members of this potential risk and provide appropriate supports in the event that audience members become upset during or after the performance. Specifically, researchers could have professional counsellors and/or psychologists on site to assist anyone who may need support. Furthermore, contact information of qualified counsellors and/or psychologists could be provided if continued support is needed after the performance. It may also be helpful for researchers, musicians, counsellors, and psychologists to have a structured post-performance discussion with the audience members where they have the opportunity to debrief about their experience and the musical performance. Finally, since music is acceptable for all research projects, including qualitative and quantitative, there is no singular procedure that exists, and music can be used as a standalone methodology or supporting methodology. Future researchers should consider how music can serve to enhance their research findings or translate the information in a more creative way. There is no limit on how, when, and why music can be used to disseminate research findings.

### **Conclusion**

In conclusion, this study gathered expert opinions on the use of music as a tool to disseminate research findings. An analysis of the participants' responses to two rounds of questionnaires confirmed the results of existing literature, in addition to uncovering innovative understanding about using music to disseminate research. This study extended the literature in the area of arts research, particularly in the unique characteristic that makes music a useful tool in disseminating research findings. Specifically, it was discovered that music has the ability to

reach new audiences and convey a variety of research topics. Researchers confirmed that music has the ability to evoke strong emotional, visceral, and embodied responses and can also create connections between participants, audience members, and researchers through the sharing of an experience (e.g., the creation of music or shared listening to music). This study also provided insight into how music can inform a new way, or different way, of understanding research by allowing the audience to experience the emotional qualities being expressed in the research. This study served to highlight the individual complexities and variations in research methods and procedures that exist when using music to disseminate research. It has also provided meaningful insight into the evolving field of using the arts to disseminate research findings. It is my hope that this study serves as a guide on the potential benefits of using the arts, and specifically music, to disseminate research findings beyond academia and to appropriate stakeholders and the general public.

## REFERENCES

- Adler, M., & Ziglio, E. (1996). *Gazing into the oracle*. Bristol, PA: Jessica Kingsley.
- Ahern, K. J., (1999). Ten tips for reflexive bracketing. *Qualitative Health Research*, 9(3), 407-411.  
doi: 10.1177/104973239900900309
- Alexander, W., & Serfass, R. W. (1999). *Futuring tools for strategic quality planning in education*. Milwaukee, WI: Quality Press.
- Alexander, D. C. (2004). A Delphi study of the trends or events that will influence the future of California charter schools. *Digital Abstracts International*, 6 (10), 3629.
- Arnason, C. & Seabrook, D. (2010). Reflections on change in arts-based research: The experiences of two music therapists. *Voices: A World Forum for Music Therapy*, 10(1). Retrieved from <https://normt.uib.no/index.php/voices/article/view/154/245>
- Art. Def. 2. (2016). In Oxford English dictionary online (3rd ed.). Retrieved from <http://www.oxforddictionaries.com/definition/english/art#nav2>
- Assembly of First Nations, Health Canada & National Native Addictions Partnership Foundation. 2012. "Honouring Our Strengths." A Renewed Framework to Address Substance Use Issues among First Nations People in Canada. Retrieved from [nnadaprenewal.ca/wp-content/uploads/2012/01/Honouring-Our-Strengths-2011\\_Eng1.pdf](http://nnadaprenewal.ca/wp-content/uploads/2012/01/Honouring-Our-Strengths-2011_Eng1.pdf).
- Baker, F., Kennelley, J., & Tamplin, J. (2005). Adjusting to change through song: Themes in songs written by clients with traumatic brain injury. *Brain Impairment*, 6(3), 205-211.
- Baker, F., & Wigram, T. (Eds.). (2005). *Songwriting: Methods, techniques and clinical application for music therapy clinicians, educators and students*. London: Jessica Kingsley Publishers.
- Barone, T., & Eisner, E. W. (2012). *Arts based research*. Los Angeles, CA: Sage.
- Bastien, S. (2009). Reflecting and shaping the discourse: The role of music in AIDS communication in Tanzania, *Social Science and Medicine*, 68(1), 1657-1360.
- Batt-Rawden, K. B. (2010). The benefits of self-selected music on health and well-being. *The Arts in Psychotherapy*, 37, 301-310. doi:10.1016/j.aip.2010.05.005
- Bazeley, P. (2006). Research dissemination in creative arts, humanities and the social sciences. *Higher Education Research & Development*, 25(3), 307-321.  
doi:10.1080/07294360600793101

- Beer, L., E. (2013). Qualitative music. *The Qualitative Report*, 18(41), 1-11. Retrieved from <http://www.nova.edu/ssss/QR/QR18/beer41.pdf>
- Blignault, I., Smith, S., Woodland, L., Ponzio, V., Ristevski, D., & Kirov, S. (2010). Fear and shame: Using theatre to destigmatise mental illness in an Australian Macedonian community. *Health Promotion Journal of Australia*, 21(2), 120-126. doi: 10.1071/HE10120
- Boyatzis, R. (1998). *Transforming qualitative information: Thematic analysis and code development*. Thousand Oaks, CA: Sage
- Boydell, K. M. (2011). Using performative art to communicate research: dancing experiences of psychosis research-based dance as a knowledge translation strategy. *Canadian Theatre Review*, 146, 12-17. doi: 10.1353/ctr.2011.0042
- Boydell, K. M. (2012). *Hearing Voices: Qualitative Inquiry in Early Psychosis*. Waterloo: Wilfrid Laurier University Press
- Boydell, K. M., Gladstone, B.M., Volpe, T., Allemang, B., & Stasiulis, E. (2012). The production and dissemination of knowledge: A scoping review of arts-based health research. *Qualitative Social Research*, 13(1). Retrieved from <http://www.qualitative-research.net/index.php/fqs/article/view/1711/3328>
- Boydell, K. M., Volpe, T., Cox, S., Katz, A., Dow, R., Brunger, F.,... Wong, L. (2012). Ethical challenges in arts-based health research. *The International Journal of The Creative Arts in Interdisciplinary Practice*, 12. Retrieved from: <http://www.ijcaip.com/archives/IJCAIP-11-paper1.html>
- Boydell, K.M., Hodgins, M., Gladstone, B.M., Stasiulis, E., Belliveau, G., Cheu, H., Kontos, P., & Parsons, J. (2015). Arts-based health research and academic legitimacy: Transcending hegemonic conventions. *Qualitative Research*, 1, 1-20.
- Braun, V. & Clark, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3 (2), 77-101. doi: 10.1191/1478788706qp063oa
- Briedenhann, J., & Wickens, E. (2002). Combining qualitative and quantitative research methods in evaluation related rural tourism development research. Paper presented at the Conference on Combining Qualitative and Quantitative Methods in Development Research, 1 – 2 July 2002, Swansea University, Swansea.
- Bruscia, K. E. (1998). *Defining music therapy*. (2<sup>nd</sup> ed.). Gilsum, NH: Barcelona Publishers.

- Bukowski, K., & Buetow, S. (2010). Making the invisible visible: A photovoice exploration of homeless women's health and lives in central Auckland. *Social Science & Medicine*, 72(1), 739-746. doi:10.1016/j.socscimed.2010.11.029
- Caine, G., & Caine, R. N. (1990). *Making connections: Teaching and the human brain*. Dale Seymour Publications.
- Canadian Institute for Health Research. (2014). *About knowledge transition*. Retrieved January 2015 from <http://www.cihr-irsc.gc.ca/e/29418.html>.
- Canadian Institute for Health Research. (2011). Appendix 3: Ethics in knowledge translation: Extending what can be done to what should be done. Retrieved from <http://www.cihr-irsc.gc.ca/e/43564.html>
- Carter, C. (2003). Arts and cognition: Performance, criticism and aesthetics. *Annuals for Aesthetics (Chronika Aesthetikes)*, 42, 19-24.
- Chilton, G. (2013). Altered inquiry: Discovering arts-based research through an altered book. *International Journal of Qualitative Methods*, 12(1), 457-477.
- Citron, P. (2011). New Atlantic Ballet Theatre work about Domestic Violence is on Point. *The Globe and Mail*. Retrieved from <http://www.theglobeandmail.com/arts/theatre-and-performance/new-atlantic-ballet-theatre-work-about-domestic-violence-is-on-point/article556025/>
- Clarke, J., Febraro, A., Hatzipantelis, M., & Nelson, G. (2005). Poetry and prose: Telling the stories of formerly homeless mentally ill people. *Qualitative Inquiry*, 11(6), 913-932.
- Cline, A. (2000). Prioritisation process using Delphi technique. Carolla Development. Retrieved from [www.carolla.com/wp-delph.htm](http://www.carolla.com/wp-delph.htm)
- Cornick, P. (2006). Nitric oxide education survey—Use of a Delphi survey to produce guidelines for training neonatal nurses to work with inhaled nitric oxide. *Journal of Neonatal Nursing*, 12(2), 62-68. doi:10.1016/j.jnn.2006.01.005
- Cox, S. M., Lafrenière, D., Brett-MacLean, P., Collie, K., Cooley, N., Dunbrack, J., & Frager, G. (2010). Tipping the iceberg? The state of arts and health Canada. *Arts & Health*, 2(2), 109-124. doi: 10.1080/17533015.2010.481291
- Creswell, J. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, USA: Sage Publications.

- Daykin, N. (2004). The role of music in an arts-based qualitative inquiry. *International Journal of Qualitative Methods*, 3(2), 36-44. Retrieved from [http://www.ualberta.ca/~iiqm/backissues/3\\_2/pdf/daykin.pdf](http://www.ualberta.ca/~iiqm/backissues/3_2/pdf/daykin.pdf)
- Dalkey, N.C., & Helmer, O. (1963). An experimentation application of the Delphi method to the use of experts. *Management Science*, 9 (3), 458-468. Retrieved from <http://mansci.journal.informs.org/>
- Dell, C. A. (2011). Voices of healing: Using music to communicate research findings. In J. Bacsu and F.M. Smith (Eds), *Innovations to Knowledge Translation: The SPHERU KT Casebook* (pp. 10-14). Retrieved from [http://www.nlcahr.mun.ca/KT\\_Casebook.pdf](http://www.nlcahr.mun.ca/KT_Casebook.pdf)
- Dell, C.A., Gardipy, J., Kirilin, N., Naytowhow, V., & and Nicol, J.J. (2014). Enhancing the wellbeing of criminalized Indigenous women: A contemporary take on a traditional cultural knowledge form. In G. Balfour & E. Comack (Eds.), *Criminalizing Women: Gender and (In)Justice in Neoliberal times* (2<sup>nd</sup> ed.), (pp. 314-329). Blackpoint, NS: Fernwood Publishing
- Delbeq, A., Van de Ven, A., & Gustafson, D. H. (1975). *Group techniques for program planning: A guide to nominal group and Delphi processes*. Glenview, USA: Scott, Foresman and Company.
- Dissanayake, E. (1992). "Making special": An undescribed human universal and the core of a behaviour of art. In B. Cooke & F. Turner (Eds.), *Biopoetics: Evolutionary explorations in the arts* (pp. 27-46). Lexington, Kentucky: ICUS.
- Dunham, R., B. (1998) *Organisational behaviour: The Delphi technique*. University of Wisconsin School of Business. Retrieved from <http://web.pdx.edu/~stipakb/download/PA555/QualQuan2.doc>
- Eisner, E. (Ed.). (1976). *The arts, human development and education*. Berkeley, CA: McCutchan
- Eisner, E. W. (1997). The promise and perils of alternative forms of data representation. *Educational Research*, 26(6), 4-10. Retrieved from [http://steinhardtapps.es.its.nyu.edu/create/courses/3311/reading/3Eisner\\_ER\\_Promise%20Peril.pdf](http://steinhardtapps.es.its.nyu.edu/create/courses/3311/reading/3Eisner_ER_Promise%20Peril.pdf)
- Engels, T. C., & Powell Kennedy, H. (2007). Enhancing a Delphi study on family-focused prevention. *Technological forecasting and social change*, 74(4), 433-451. Retrieved from <http://www.sciencedirect.com.cyber.usask.ca/science/article/pii/S0040162505001721>

- Estrella, K., & Forinash, M. (2007). Narrative inquiry and arts-based inquiry: Multinarrative perspectives. *Journal of Humanistic Psychology, 47*, 376–383.
- Familusi, E. B., & Owoeye, P. O. (2014). An assessment of the use of radio and other means of information dissemination by the residents of Ado-Ekiti, Ekiti-State, Nigeria. *Library Philosophy and Practice (e-journal)*. Paper 1088. Retrieved from: <http://digitalcommons.unl.edu/libphilprac/1088>
- Ferrari, E. (2012). Music as a lifelong learning opportunity. *Prodecia - Social and Behavioural Sciences, 46*, 805-810.
- Fraser, K. D., & Sayah, F. (2011) Arts-based methods in health research: A systematic review of the literature. *Arts & Health: An International Journal for Research, Policy and Practice, 3*(2), 110-145. doi: 10.1080/17533015.2011.561357
- Frazier, S. (2013, July 23). Sonification: Data like you've never heard before. Retrieved from <http://earthzine.org/2013/07/23/sonification-data-like-youve-never-heard-before/>
- Frith, H., Harcourt, D. (2007). Using photographs to capture women's experiences of chemotherapy: Reflecting on the method. *Qualitative Health Research, 17*(10), 1340-1350. doi: 10.1177/1049732307308949
- Furman, R. (2004). Poetry as qualitative data for exploring social development and human experience in Latin America. *Journal of Latino/Latin American Studies, 1*(3), 81-104.
- Furman, R., Collins, k., Langer, C., & Bruce, E. A. (2006). Inside a provider's perspective: Using practitioner poetry to explore the treatment of persons with mental illness. *The Arts of Psychotherapy, 33*(4), 331-342. doi:10.1016/j.aip.2006.04.003
- Gadanidis, G., & Borba, M. (2008). Our lives as performance mathematicians. *For the Learning of Mathematics, 28*(1), 44-51.
- Gadanidis, G., & Borba, M. (2013). New media and research dissemination: The case of performing mathematics education research. *Journal of Educational Multimedia and Hypermedia, 22*(1), 25-38.
- Gamon, J., A. (1991). The Delphi: An evaluation tool. *Journal of Extension, 29*(4).
- Gergen, K. J. (1985). The social constructionist movement in modern psychology. *American Psychologist, 40*(3), 266-275.
- Gerstenblatt, P. (2013). Collage portraits as a method of analysis in qualitative research. *International Journal of Qualitative Methods, 12*(1), 294-309.

- Gerofsky, S. (2010). Performance mathematics and democracy. *Educational Insights*, 13(1), Special issue "Performing the Sign". Available at <http://www.ccfi.educ.ubc.ca/publication/insights/v13n01/toc.html>
- Gouk, P. (2000). *Music Healing in Cultural Contexts*. Ashgate, Aldershot.
- Greenberg, D. M., Rentfrow, P. J., & Baron-Cohen, S. (2015). Can music increase empathy? Interpreting musical experiences through the empathizing-systemizing (E-S) theory: Implications for autism. *Empirical Musicology Review*, 10(1), 79-94.
- Green, C. (2013, October, 22). Chelsea Green: Music is a pathway for understanding world cultures. News@AUC. Retrieved from <http://www.aucegypt.edu/news/stories/chelsea-green-music-pathway-understanding-world-cultures>
- Greene, M. (1975). Curriculum and consciousness. In W. Pinar (Ed.), *Curriculum theorizing: The reconceptualisits* (pp. 295 – 298). Berkeley, CA: McCutchan.
- Grumet, M. (1978). *Songs and situations*. In G. Willis (Ed.), *Qualitative Evaluation* (pp. 274 – 315), Berkeley, CA: McCutchan.
- Guest, G., Namey, E. E., & Mitchell, M. L., (2013). *Collecting Qualitative Data: A Field Manuel for Applied Research*. Thousand Oaks, California: Sage, Inc.
- Guillemin, M. (2004). Understanding illness: Using drawing as a research method. *Qualitative Health Research*, 14, 272-289. doi: 10.1177/1049732303260445
- Harrison, E.F. (1995). *The Managerial Decision-Making Process* (4th ed.). Boston: Houghton Mifflin Company.
- Harper, D. (2002). Talking about pictures: a case for photo elicitation. *Visual Studies*, 17(1), 13-26. doi: 10.1080/14725860220137345
- Hasson, F., Keeney, S. (2011). Enhancing rigour in the delphi technique research. *Technological Forecasting & Social Change*, 78, 1695-1704. doi:10.1016/j.techfore.2011.04.005
- Horden, P. (2000). *Music as Medicine. The History of Music Therapy since Antiquity*. Ashgate, Aldershot.
- Hunter, P. L. (2002). Poetry as an aesthetic expression for nursing: A review. *Journal of Advanced Nursing*, 40(2), 141-148. doi: 10.1046/j.1365-2648.2002.02356.x
- Hutchinson, J. R., & Huberman, M. (1994). Knowledge dissemination and use in science and mathematics education: A literature review. *Journal of Science Education and Technology*, 3(1), 27-47.

- Ilari, B., Chen-Hafteck, L., & Crawford, L. (2013). Singing and cultural understanding: A music education perspective. *International Journal of Music Education, 31*(2), 202-216.
- Jacobson, N., Butterille, D., & Goering, P. (2003). Development of the framework of knowledge translation: Understanding user context. *Journal of Health Services Research, 8*(2), 94-99. doi: 10.1258/135581903321466067
- Jasny, B. R., & Zahn, L. M. (2011). A celebration of the genome, part IV. *Science, 331*, 1024-1027. Retrieved from [www.sciencemag.org](http://www.sciencemag.org)
- Jonas-Simpson, C., Mitchell, G. J., Carson, J., Whyte, C., Dupuis, S., & Gillies, J. (2011). Phenomenological shifts for healthcare professionals after experiencing a research-based drama on living with dementia. *Journal of Advances Nursing, 68*, 9, 1944-1955. doi: 10.1111/j.1365-2648.2011.05877 .x.
- Keen, S., & Todres, L. (2006). *Communicating qualitative research findings: An annotated bibliographic review of non-traditional dissemination strategies*. Institute of Health and Community Studies: Bournemouth University.
- Keen, Steven & Todres, Les (2007). Strategies for disseminating qualitative research findings: Three exemplars. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, 8*(3). Retrieved from <http://nbn-resolving.de/urn:nbn:de:0114-fqs0703174>.
- Kidd, L. I., & Tusaie, K. R. (2004). Disconfirming beliefs: The use of poetry to know the lived experience of student nurses in mental health clinics. *Issues in Mental Health Nursing, 25*(4), 403-414. doi: 10.1080/01612840490432934
- Kingman, D. (2003). *American Music: A Panorama* (2nd Ed). Belmont, CA: Wadsworth/Thomson Learning.
- Lafrenière, D., & Cox, S. M. (2012). Means of knowledge dissemination: Are the café scientifique and the artistic performance equally effective? *Sociology Mind, 2*(2), 191-199. Retrieved from <http://www.SciRP.org/journal/sm>. doi: 10.4236/sm.2012.22025
- Landeta, J. (2006). Current validity of the delphi method in social sciences. *Technological Forecasting & Social Change, 73*(1), 467-482. doi:10.1016/j.techfore.2005.09.002
- Langer, C. L., Furman (2004). Exploring identity and assimilation: Research and interpretive poems. *Forum: Qualitative Social Research, 5*(3). Retrieved from <http://www.qualitative-research.net/index.php/fqs/article/view/609/1319>

- Lapum, J., Ruttonsha, P., Church, K., Yau, T., & David, A. M. (2011). Employing the arts in research as an analytical tool and dissemination method: Interpreting experience through the aesthetic. *Qualitative Inquiry*, 18(1), 100-115. Retrieved from <http://qix.sagepub.com/content/18/1/100> doi: 10.1177/1077800411427852
- Lapum, J., Church, K., Yau, T., Davis, A. M., & Ruttonsha, P. (2012). Arts-informed research dissemination: Patients' perioperative experiences of open-heart surgery. *The Journal of Acute and Critical Care*, 41(5), 4-14.
- LeClerc, C. M., Wells, D. L., Craig, D., & Wilson, J. L. (2002). Falling short of the mark: Tales of life after hospital discharge. *Clinical Nursing Research*, 11(3), 242-263. doi: 10.1177/10573802011003002
- Ledger, A., & Edwards, J. (2011). Arts-based research practices in music therapy research: Existing and potential developments. *The Arts in Psychotherapy*, 38, 312-317. doi:10.1016/j.aip.2011.09.001
- Lehr J. C., Bartlett, J., & Tabvahtah, J. (2006). The distant beat of my father's drums: Contemporary Aboriginal music and NCI-FM Broadcasting, Manitoba, Canada. *GeoJournal*, 65, 79-90.
- Lerman, Z. M. (2003). Using the arts to make chemistry accessible to everybody. *Journal of Chemical Education*, 80(11), 1234-1242. Retrieved from <http://pubs.acs.org.cyber.usask.ca/doi/abs/10.1021/ed080p1234>
- Leavy, P. (2009). *Method meets art: Arts-based research practice*. New York, NY: Guilford Press.
- Linstone, H., & Turoff, M. (1975). *The Delphi method: Techniques and applications*. Cambridge, MA: Addison Wesley.
- Loersch, C., & Arbuckle, N. L. (2013). Unraveling the mystery of music: Music as an evolved group process. *Journal of Personality and Social Psychology*, 105 (5), 777-798. doi: 10.1037/a0033691
- Loyens, K., Maesschalck, J., & Bouckaert, G. (2011). Delphi in criminal justice: A case policy on judgement forecasting. *The Qualitative Report*, 16(6), 1477-1405. Retrieved from <http://www.nova.edu/ssss/QR/QR16-6/loyens.pdf>
- Masatu, M. C., Kvale, G., & Klepp, K. I. (2003). Reported sources and perceived credibility of reproductive health information among primary school adolescents in Arusha, Tanzania. *Scandinavian Journal of Public Health*, 31, 216-223.

- McCaw, K. (2013). *Disseminating knowledge with dance*. (Master's thesis). Retrieved from <http://hdl.handle.net/10388/ETD-2013-12-1325>
- McIntyre, M., & Cole, A. (2008). Love stories about caregiving and Alzheimer's disease: A performative methodology. *Journal of Health Psychology, 13*(2) 213–225. doi: 10.1177/1359105307086701
- McNiff, S. (2007). Art-based research. In J.G. Knowles, & A. L. Cole (Eds.), *Handbook of the Arts in Qualitative Research: Perspectives, Methodologies, Examples, and Issues* (pp. 29-40). New York: SAGE, Inc.
- McNiff, S. (2011) Artistic expressions as primary modes of inquiry. *British Journal of Guidance & Counselling, 39*(5), 385-396. doi: 10.1080/03069885.2011.621526
- Michalak, E. E., Livingston, J. D., Maxwell, V., Hole, R., Hawke, L. D., & Parikh, S. V. (2014). Using theatre to address mental illness stigma: A knowledge translation study in bipolar disorder. *International Journal of Bipolar Disorder, 2*(1), 1-12. doi: 10.1186/2194-7511-2-1
- Miller, E., & Brockie, L. (2015). The disaster flood experience: Older people's poetic voices of resilience. *Journal of Aging Studies, 34*, 103-112. doi.org/10.1016/j.jaging.2015.05.003
- Music can help break communication barriers with people with dementia, study funds. (2013, April 23). Retrieved from [https://www.mentalhealthtoday.co.uk/music\\_can\\_help\\_break\\_communication\\_barriers\\_with\\_people\\_with\\_dementia.aspx](https://www.mentalhealthtoday.co.uk/music_can_help_break_communication_barriers_with_people_with_dementia.aspx)
- Nadkarni, N. M. (2004). Not preaching to the choir: Communicating the importance of forest conservation to non-traditional audiences. *Society for Conservation Biology, 18*(3), 602-606).
- Nettl, B. (1983). *The study of ethnomusicology: Thirty-one issues and concepts*. Champaign: University of Illinois Press.
- Nowicka-Sauer, K. (2007). Patients' perspective: Lupus in patients' drawings. *Clinical Rheumatology, 26*(9), 1523-1525. doi: 10.1007/s10067-007-0619-9
- Okoli, C., & Pawlowski, S. D. (2004). The delphi method as a research tool: An example, design considerations and applications. *Information & Management, 42*(1), 15-29. doi:10.1016/j.im.2003.11.002

- Oliffe, J. L., Bottorff, J. L., Kelly, M., Halpin, M. (2008). Analyzing participant produced photographs from an ethnographic study of fatherhood and smoking. *Research in Nursing & Health*, 31(5), 529-539. doi: 10.1002/nur.20269
- Orb, A., Eisenhauser, L., & Wynaden, D. (2000). Ethics in qualitative research. *Journal of Nursing Scholarship*, 33(1), 93-96.
- Orr, N., & Phoenix, C. (2015). Photographing physical activity: Using visual methods to ‘grasp at’ the sensual experiences of the aging body. *Qualitative Research*, 15(4), 454-472. doi: 10.1177/1468794114543401
- Panhofer, H., Payne, B., Meekums, T., & Parke, T. (2011). Dancing, moving and writing in clinical supervision? Employing embodied practices in psychotherapy supervision. *The Arts in Psychotherapy*, 38(1), 9-16.
- Parsons, J.A., & Boydell, K.M. (2012). Arts-based research and knowledge translation: Some key concerns for health-care professionals. *Journal of Interprofessional Care*, 26, 170-172. doi: 10.3109/13561820.2011.647128
- Pascale, L. M. (2013). The role of music in education: Forming cultural identity and making cross-cultural connections. *Harvard Educational Review*, 83(1), 127-134.
- Patton, M. Q. (1997). *Utilisation-focused Evaluation* (3<sup>rd</sup> ed.), Thousand Oaks, California: SAGE Publications.
- Pelander, T. P., Lehtonen, K., & Leino-Kilpi, H. (2007). Children in the hospital: Elements of quality in drawings. *Pediatric Nursing*, 22(4), 333-341. doi: 10.1016/j.pedn.2007.06.004
- Piercy, F. P., & Benson, K. (2005). Aesthetic forms of data representation in qualitative family therapy research. *Journal of Marital and Family Therapy*, 31(1), 107–119
- Poindexter, C. C. (2002). Meaning from methods re-representing narratives of an HIV-affected caregiver. *Qualitative Social Work*, 1(1), 59-78. doi: 10.1177/147332500200100105
- Powell, C. (2003). The Delphi technique: myths and realities. *Journal of Advanced Nursing* 41(4), 376–382. doi: 10.1046/j.1365-2648.2003.02537.x
- Quaile Hill, K., & Fowles, J. (1975). The methodological worth of the Delphi forecasting technique. *Technological Forecasting and Social Change*, 7(1), 179-192.
- Qualitative research paradigms and traditions. (2012). In D. G. Hays & A. A. Singh (Eds.), *Qualitative Inquiry in Clinical and Educational Settings* (pp. 32-66). New York, London: The Guildford Press.

- Radley, A., & Taylor, D. (2003). Images of recovery: A photo-elicitation study on the hospital ward. *Qualitative Health Research, 13*(1), 77-99. doi: 10.1177/1049732302239412
- Robertson, D.W., Martin, D.K., & Singer, P. (2003). Interdisciplinary research: Putting the methods under the microscope. *BMC Medical Research Methodology, 3*(20).
- Rosenbaum, J. (1985). A college and university curriculum designed to prepare students for careers in non-broadcast private telecommunications: A Delphi method survey of professional video communicators. *Digital Abstracts International, 46*(09), 2548.
- Rossiter, K., Kontos, P., Colantonio, A., Gilbert, J., Gray, J., & Keightley, M. (2008). Staging data: Theatre as a tool for analysis and knowledge transfer in health research. *Social Science & Medicine, 66*(1), 130-146. doi:10.1016/j.socscimed.2007.07.021
- Rowe, G., & Wright, G. (1999). The Delphi technique as a forecasting tool: Issues and analysis. *International Journal of Forecasting, 15*(4), 353 -375. Retrieved from <http://www.sciencedirect.com.cyber.usask.ca/science/article/pii/S0169207099000187>
- Rykov, M. H. (2008). Melodic-poetic transcription: Research sings. *Journal of the Canadian Association for Music Therapy, 13*(2), 160-170.
- Salanick, J.R., Wenger, W., & Helfer, E. (1971). The construction of Delphi event statements. *Technology Forecasting and Social Change, 3*, 65-73.
- Schneider, J., Lowe, S., Myers, T., Scales, K., Bailey, S., & Middleton, (2014). A short report on knowledge exchange through research-based theatre: 'Inside out of mind'. *Social Science & Medicine, 118*, 61-65.
- Schunk, D. H. (2000). *Learning theories: An educational perspective*. New Jersey: Prentice-Hall.
- Schwandt, T. A. (2001). *Dictionary of qualitative inquiry* (2nd ed.). Thousand Oaks, CA: Sage Publications Ltd.
- Sinner, A., Leggo, C., Irwin, R. L., Gouzouasis, P., & Grauer, K. (2006). Arts-based educational research dissertations: Reviewing the practices of new scholars. *Canadian Journal of Education, 29*(4), 1223-1270. Retrieved from <http://www.jstor.org/stable/20054216>
- Skulmoski, G. J., Hartman, F. T., & Krahn, J. (2007). The Delphi method for graduate research. *Journal of Information Technology Education, 6*(1), 1-21.
- Sloboda, J., A. (1991). Music structure and emotional response: Some empirical findings. *Psychology of Music, 19*, 110-120.

- Solanki, M. S., Zafar, M., & Rastogi, R. (2013). Music as a therapy: Role in psychiatry. *Asian Journal of Psychiatry*, 6, 193-199. doi: 10.1016/j.ajp.2012.12.001
- Sullivan, J. (2003). The therapeutic community sing: music therapy inpatient group process. *Group*, 27(1), 31-39.
- Sumsion, T. (1998). The Delphi technique: An adaptive research tool. *The British Journal of Occupational Therapy*, 61(4), 153-156.
- Teddie, C., & Yu, F. (2007). Mixed methods sampling: A typology with examples. *Journal of Mixed Methods Research*, 1(1), 77-100.
- Tetroe, J. (2007). Knowledge translation at the Canadian Institutes of Health Research: A primer. *FOCUS: A Technical Brief From the National Center for the Dissemination of Disability Research*, 18. Retrieved from: [http://www.ktdrr.org/ktlibrary/articles\\_pubs/ncddrwork/focus/focus18](http://www.ktdrr.org/ktlibrary/articles_pubs/ncddrwork/focus/focus18)
- Thaut, M. H. (2005). The future of music in therapy and medicine. *Annals New York Academy of Sciences*, 1060, 303-308. doi: 10.1196/annals.1360.023
- The Aboriginal Healing Foundation Research Series. (2012). "Dancing, singing, painting, and speaking the healing story: Healing through creative arts." Ottawa: Aboriginal Healing Foundation.
- The Mental Health Commission of Canada. (2015, June 11). Music and song as knowledge translation tools. Sharing Through the Arts, SPARK Workshop.
- Thunder Spirit Consulting. (2013). Retrieved on March 1, 2013, from <http://www.thunderspiritconsulting.ca/ssp.html>
- Tomaski, T. (2010). Reliability and validity of the Delphi method in guideline development for family physicians. *Quality in Primary Care*, 18(1), 317-326.
- Tsay, C. J. (2013). Sight over sound in the judgment of music performance. *Proceedings of the National Academy of Sciences*, 110(36), 14580-14585.
- Tufford, L., & Newman, P. (2010). Bracketing in qualitative research. *Qualitative Social Work*, 11(1), 80-96. doi: 10.1177/1473325010368316
- Vallance, E. (1977). The landscape of the "great plains experience": An application of curriculum criticism. *Curriculum Inquiry*, 7(2), 87 – 105. Retrieved from <http://www.jstor.org/stable/1179810>

- Van Zolingen, S J. & Klaassen, C. A. (2003). Selection process in a Delphi study about key qualifications in senior secondary vocational education. *Technological Forecasting & Social Change*, 70, 317–340. doi:10.1016/S0040-1625(02)00202-0
- Vander Kooij, C. (2009). Recovery themes in songs written by adults living with serious mental illnesses. *Canadian Journal of Music Therapy*, 15(1), 37-58.
- Walter, I., Nutley, S., & Davies, H. (2003). Research impact: A cross-sector review [online]. St Andrews: University of St. Andrews. Retrieved from: <http://www.st-andrews.ac.uk/~ruruweb/pdf/LSDA%20literature%20review%20final.pdf> [Date of access: August 19, 2015].
- Weinberger, N. M. (2006). Music and the brain. *Scientific American*, 16(3), 36-43.
- Williamson, Karla J. 2000. “Celestial and Social Families of the Inuit.” In Ron Laliberte, Priscilla Settee, James B. Waldram, Rob Innes, Brenda Macdougall, Lesley McBain and F. Laurie Barron (eds.), *Expressions in Canadian Native Studies*. Saskatoon: University Extension Press.
- Wolff, C. (2000). *Johann Sebastian Bach. The learned musician*. New York: W. W. Norton & Company.
- Woo, Y. Y. J. (2008). Engaging new audiences: Translating research into popular media. *Educational Researcher*, 37(6), 321-329. doi: 10.3102/0013189X08324229

## Appendix A: Participant Invitation

### **Let's Make Music**

Using the creative arts in the research process is an innovative topic in qualitative inquiry. Artistic forms such as theater, dance, photos, music, and poetry are increasingly being used to generate data, and disseminate findings (Woo, 2008). The very qualities of aesthetic media that make them therapeutically effective (e.g., ability to release emotions), also make them effective in the research process (Thom, 2010).

As a graduate student in Educational Psychology and Special Education at the University of Saskatchewan *I am interested in the use of music as a tool for knowledge dissemination within research.* Under the supervision of Dr. J. Nicol (registered psychologist) I am inviting you to participate in a research project entitled *Disseminating Knowledge with Music.*

#### **In order to participate, you must:**

- a) has some form of experience with the arts (i.e., arts researcher/or researcher aware of arts research, music, etc.);
- b) be willing to provide their expert opinion via email with the researcher and the other panel members;
- c) be willing for the researcher to share their responses with other panel members;
- d) be comfortable with computers (i.e., typing and able to interact through email) and have access to a computer
- e) be willing to complete the Delphi rounds;
- f) be eighteen years or older; and
- g) be fluent in English.

**If you are able to contribute to this study please contact Jacqueline Pollard at [jjp431@mail.usask.ca](mailto:jjp431@mail.usask.ca) for more information.**

**If you know of someone who could meet the criteria to participate it would be greatly appreciated if you could pass this invitation along.**

## Appendix B: Participant Consent Form

### Consent Form

You have been invited to participate in a study entitled “Disseminating Knowledge with Music”. The following form outlines the study’s objective, rationale, procedure and study timeline, potential risks and benefits, issues of confidentiality and data storage, as well as your right to withdraw from the study and to ask any questions you might have.

- Researchers: Jacqueline Pollard, M.Ed Candidate (email: [jjp431@mail.usask.ca](mailto:jjp431@mail.usask.ca), phone: (306) 251-0237 & Dr. Jennifer Nicol (Thesis supervisor), Department of Educational Psychology & Special Education, University of Saskatchewan (email: [jennifer.nicol@usask.ca](mailto:jennifer.nicol@usask.ca), phone: (306) 966-5261.
- Objective: This study is intended to investigate the experiences and opinions of researchers and musicians about the use of music in research as a tool for knowledge dissemination.
- Rationale: There is a growing body of research integrating the arts into the research process. Artistic forms such as theater, dance, photos, music, and poetry are increasingly being used to generate data, and disseminate findings (Woo, 2008). The focus of this study is knowledge dissemination, which the Canadian Institutes for Health Research (CIHR, 2009) defined as “a specific and purposeful approach to sharing research evidence with knowledge users” that involves identifying the appropriate audience and accommodating the message and medium to the audience. Art based knowledge dissemination is a relatively new phenomenon, however, select scholars have applied knowledge dissemination through the arts with film (Woo, 2008), theatre (Blignault et al., 2010), photography and poetry (Lapum, Church, Yau, Davis, & Ruttonsha, 2012) and dance (Boydell, 2011). There are fewer references to music although, researchers have recognized that music suits the purposes of knowledge dissemination. This study’s purpose is to advance understanding about using music in research as a tool for knowledge dissemination.
- Procedures: A group of 5-10 researchers and musician will be consulted. Two to three rounds of online questionnaires will be conducted. Participants will have one-week to complete each questionnaire, which will take place over a 4-6 week timeframe. Each questionnaire will have 4-6 questions, will be sent by email, and will take approximately 20-45 minutes to complete. There will be 1 or 2 weeks between questionnaires.
- Benefits: By partaking in this study participants will have the opportunity to reflect upon their experiences of using music to disseminate research findings as well as learn and share opinions with other researchers and musicians. Participants will also be making a contribution to extend knowledge within this area of arts research.

- Risks:** There is no risk apparent in this study. Participation is strictly voluntary and participants are free to withdraw from the research at anytime, or choose to not answer questions on the survey. Safeguards will be implemented to ensure confidentiality in the analysis of data and conclusions. Though all data gathered through the study will be treated with confidentiality, anonymity cannot be assured.
- Questionnaire:** The questionnaires will be created using Microsoft Word and emailed to participants individually. Participants can then type their answers on the Microsoft Word document and email it back to the researcher. Each survey will take about 20-45 minutes to complete.
- Confidentiality:** Your privacy will be respected. Your name will not be attached to any information, nor mentioned in any study report, nor be made available to anyone except the research team. There is however limits on confidentiality due to the small sample size of participants with specific knowledge about the study's topic and the procedures for recruiting participants (you may be referred to the study by someone outside the research team). It is the intention of the research team (student researcher Jacqueline Pollard M.Ed Candidate & Dr. Jennifer Nicol Thesis supervisor) to publish results of this research in a thesis and scientific journals and to present findings at related conferences, but your identity will not be revealed.
- Storage of Data:** All contributions made by participants will be kept confidential during data analysis and not shared with others outside the research team. The student researcher Jacqueline Pollard will store the raw data password protected on a personal computer in order for data analysis. Data will be stored separate from consent forms.
- Once thesis is successfully defended, raw data will be stored by faculty supervisor Dr. Jennifer Nicol for five years upon completion of the study; after five years data will be destroyed. Data will be stored using the University of Saskatchewan secure Cabinet on PAWS; all other necessary paperwork will be stored on the University of Saskatchewan secure Cabinet on Paws as well. Once electronic data is stored, raw electronic data will be destroyed via a secure trash function on the student researcher's laptop.
- Right to Withdraw:** Your participation is voluntary, and you can answer only those questions that you are comfortable with. The information that is shared will be held in strict confidence and only discussed amongst the research team. You may withdraw from the research project for any reason and without penalty of any sort. Your right to withdraw data from the study is until February 1st, 2016. After this it is possible that some form of the research dissemination has already occurred and it may not be possible to withdraw your data. Please contact the student researcher Jacqueline Pollard prior to this date if you wish to withdraw (jjp431@mail.usask.ca).

Other: This research is for a graduate student's master's thesis, conference presentations, and article presentations.

Questions: If you have any questions concerning the research project, please feel free to ask at any point; you are always welcome to contact the researchers via email or through the numbers provided if you have any questions. This research project has been approved on ethical grounds by the University of Saskatchewan Research Ethics Board on. Any questions regarding your rights as a participant may be addressed to that committee through the Research Ethics office ethics.office@usask.ca (306) 966-2975. Out of town participants may call toll free (888) 966-2975. If you are interested, you may obtain the results of the study by contacting the student researcher Jacqueline Pollard, or Dr. Nicol.

Follow-Up: A thank-you email will be sent to conclude the study. Participants will be allowed to request an electronic copy of the completed master's thesis once it is defended.

Consent to Participate: I have read and understood the description provided above. I consent to participate in this study, understanding that I may withdraw at any time.

**Please type a statement beside the X stating "I (blank) agree to participate in this study."**

**X**

**You can also call the student researcher Jacqueline Pollard or the research Supervisor Dr. Nicol and give verbal consent.**

Jacqueline Pollard: (306) 251-0237  
Dr. Jennifer Nicol: (306) 966-5261

## Appendix C: Demographic Form

### **Demographic Information**

(a) Gender:

(b) Age:

(c) Ethnicity:

(c) Highest educational degree:

(d) Current employment – title/position:

(e) Do you identify as a researcher, musician or both?

(f) Years of experience doing research?

(g) Years of experience as a musician?

## Appendix D: Round One Delphi Questionnaire

### Round One Questionnaire

Please describe your most recent experience using music in research dissemination, a project in which **music was used “to share research evidence with knowledge users”** (CIHR, 2014).

- Study’s name
- Study’s Purpose
- Research design/procedures
- How music was part of study
- Number of team members and roles
- Your role and responsibilities
- Benefits of incorporating music?
- Challenges?

#### Four key questions

- 1) Do you think music is a useful means for disseminating research findings? Explain why or why not.
- 2) When is it appropriate to use music as a tool for disseminating research findings? Are there certain kinds of projects, purposes, and topics suited for the use of music or can music be used in all research?
- 3) How do you incorporate music into research for the purpose of disseminating research findings? What are the steps or the process?
- 4) Advice for others interested in using music to disseminate research findings?

## Appendix E: Round Two Delphi Questionnaire

### Round Two Questionnaire

Excerpts from Round One are below. Please read each statement and answer the corresponding question(s).

1. A consensus emerged that music has the ability to make research more understandable. One participant suggested that music has the ability to make data more understandable since it *connects the heart and the brain*.
  - a. Based on your experience, how does music make research more understandable? Please provide an example to illustrate
  - b. Does the phrase “connecting the heart and the brain” make sense to you? Please explain.
2. Some suggested that *music stands on its own as a methodology* whereas others described *music as simply one tool that can help deliver a message*, e.g., pairing it with dance, movement, dialogue, or video can enhance the message. Please reflect on the comment and answer the following questions.
  - a. Has your experience been with using music as a stand-alone methodology, as a supporting medium, or with both?
  - b. Do you have a strong opinion on this subject? e.g., are both positions valid OR do you have concerns with one or the other? Please explain.
3. A consensus emerged that *music communicates that which words cannot express*.
  - a. Please reflect on this comment and describe an instance in your research where music was able to communicate what words could not express.

4. A consensus emerged that music has the ability to capture emotional and visceral aspects of complex concepts:
  - a. In your discipline, what visceral and emotional aspects of knowledge are communicated by music? Please provide an example to illustrate.
  
5. One of the unique features associated with music is that it can break down barriers.
  - a. Please describe any barriers you have encountered in research that music was able to circumvent.
  
6. A consensus emerged that music can have surprising effects on a listener. One participant suggested that, *memories may stir certain experiences and responses, which can lead to either positive results or disturbing results*. Please reflect on the comment and answer the following question:
  - a. Are standard research ethical guidelines sufficient for research using music OR are there additional ethical responsibilities to consider? Please explain and if appropriate, please use examples to illustrate.
  
7. When using music to disseminate research findings one participant suggested that, *you do not have control over the process really, but it will go and end up where it needs to!* Please reflect on the comment and answer the following question:
  - a. Based on your experience, is there a level of unpredictability to research when using music that is different than other research you've been involved in? Please explain your answer.

## Appendix F: Debriefing Letter and Thank-you

Dear (Participants Name),

Thank you for participating in the “Disseminating Research with Music” research study. I cannot begin to express how valuable your contributions have been and without your expertise it would not have been possible. The aim of this study was to investigate the experiences and opinions of researchers and musicians about using music to disseminate research findings. I hope that this study will help researchers, musicians, and the general public view music as a legitimate way of translating research findings. As a reminder, the information you provided will be anonymous and you have the right to withdraw your data from the study before February 1<sup>st</sup>, 2016. Once this thesis has been successfully defended and submitted electronically to the College of Graduate Studies and Research (CGSR) I will provide you with a link to the Electronic These and Dissertations (ETD). I anticipate to defend my thesis in Spring 2016. If you have any questions, comments or concerns please do not hesitate to contact me.

Best regards,

Jacqueline Pollard, M.Ed. Candidate

Jennifer Nicol, PhD, MTA, RDPsych

University of Saskatchewan  
Saskatoon, SK, Canada  
S7N 0X1