

The Clinical Use of Key Modulation by Music Therapists in Canada: A Modified Grounded
Theory Study

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ABSTRACT

The Clinical Use of Key Modulation by Music Therapists in Canada: A Modified Grounded Theory Study

Stephanie Maxwell

The purpose of this research was to gather the perspectives of Canadian music therapists on their clinical use of key modulation in music therapy. Key modulation is the shift from one tonal centre to a new one, and it is a musical element that is often discussed in the training of music therapists. However, no literature to date clearly articulated potential clinical benefits of using key modulation in music therapy. The research question that guided this inquiry was: “How do music therapists in Canada use key modulation in their clinical practice?” Using a modified grounded theory methodology to generate more information about this specific phenomenon, three experienced music therapists took part in semi-structured interviews, which were analyzed using Neumann’s (2006) procedures of open coding, axial coding and selective coding. Five main themes emerged as a result of the analysis process: Music therapists used key modulation as (a) a source of change, (b) to enhance the aesthetic experience, to (c) encourage connection, (d) to support emotional experiences and as an indicator of the (e) therapists’ musical path. The discussion chapter interpreted key findings including that client’s awareness of key modulation as a source of change was supported by the literature. Additionally, the prevalence of key modulation in the popular music idiom was discussed as it related to music therapists’ clinical practice. The implications of the research for education, clinical practice and suggestions for further research are presented.

Keywords: Key Modulation, Music Therapy, Clinical Improvisation, Clinical Musicianship, Modified Grounded Theory

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Chapter 1. Introduction

Significance of the Inquiry

Music therapy is defined as a certified music therapist's purposeful use of music within a therapeutic relationship to achieve various health and wellbeing goals (Canadian Association of Music Therapists [CAMT], 2016). It is the specific use of music in clinical contexts that sets music therapy apart from other therapeutic disciplines that are verbally-based (CAMT, 2016). The use of music within the therapeutic relationship creates a space for addressing emotional, social, physical, spiritual, communicative, cognitive and musical goals through musical experiences (CAMT, 2016). During their training, music therapists learn to use music and its elements with intent, which is referred to as the development of clinical musicianship (Nordoff et al., 2014). One component of competent clinical musicianship is to be comfortable playing and singing in different musical keys. This is defined as a set of musical boundaries that often includes a note or chord that a piece returns to, (Kostka et al., 2012), as well as being comfortable using key modulation (which is the shift from one key to another). While the practicalities of how to modulate or use key modulation in relation to other foci has been discussed in the music therapy literature (Aigen, 2005; Brown & Pavlicevic, 1996; Bruscia, 1987; Carroll & Lefebvre, 2013; Lee, 1992; Lee, 2000; Lee & Houde, 2011; Lee, 2012; Mahoney, 2016; Nordoff & Robbins, 2007;), there has been little published information on the potential clinical benefits of using key modulation to support the realization of clinical goals.

As noted above, the musical key establishes a set of boundaries and is often a note or chord that the piece returns to (Kostka et al., 2012). This tonal centre is often described as a musical container or a home base (Bruscia, 1987). There are various ways to disrupt that tonal centre, including non-diatonic chords, chromaticism and the introduction of melodic tension (Kostka et al., 2012). One way to disrupt the tonal centre is to use key modulation or, in other words, to shift the music to a different key. Even untrained musicians are able to notice this musical change although they may be unable to articulate the source of the change (Koelsch et al., 2002).

The use of music in music therapy is given great attention in educational settings, including the clinical use of musical elements such as harmony. One component of

clinical musicianship as it relates to harmony is to be comfortable playing and singing in different musical keys, as well as being comfortable using key modulation. The CAMT Entry level professional competencies do outline the importance of harmony and transposition for primary instruments used in music therapy such as piano, voice and guitar (CAMT, 2016). However, these competencies do not outline rationale for the purposeful use of specific harmonic elements such as key modulation. Examining current uses of key modulation in music therapy could lead certified music therapists to reflect on or even make changes to the way they use (or not use) this musical element in their clinical practice.

Personal Relationship with the topic

Key modulation is a musical element that has been fascinating to me. This musical element is prevalent in western popular music, including examples such as “Love on Top” by Beyoncé (Knowles, 2011), and “Wouldn’t it be nice” by The Beach Boys (Beach Boys, 1966). Some of my favourite songs include key modulation such as “So Close” by Jon McLaughlin (McLaughlin, 2007) and “You’ll be in my Heart” by Phil Collins (Collins, 1999). I became interested in the use and impact of key modulation in clinical practice while completing my music therapy internship. I noticed in my own work that key modulation could be used with clients to increase focus and attention. This led me to wonder about how other music therapists in Canada use key modulation in their clinical work and the intent underlying its use.

Statement of Purpose

In summary, it appears that clinical musicianship and the purposeful use of musical elements is important to music therapists in Canada. However, there is little information on the clinical use of key modulation. Therefore, the purpose of this research was to gather and examine the perspectives of Canadian music therapists on their clinical use of key modulation in music therapy.

Research Question

The primary research question that guided this inquiry was: “How do music therapists in Canada use key modulation in their clinical practice?” The subsidiary question was “What clinical goals do Canadian music therapists seek to address through the clinical use of key modulation?”. Subsidiary questions asked were “What are the

music therapy contexts in which key modulation is used?,” “What are the music therapy goals addressed and/or supported by the use of key modulation?,” “What are the music therapy experiences in which key modulation is used?”

Delimitations

This research focused on key modulation and did not include metric or rhythmic modulation. To respect the time limitations and scope of a master’s thesis, the number of participants was delimited to three. Accordingly, a modified grounded theory methodology was utilized, as it does not require data saturation, which would have not been reached with a limited, predetermined sample size. The purpose of modified grounded theory is to learn more about a specific phenomenon on which little is known (Amir, 2005) and it was therefore deemed to be a suitable methodology for the present study. The research was also delimited to Canadian perspectives as I live in Canada and could access participants via my national professional association. Finally, this research only included the perspectives of music therapists rather than the perspectives of their clients.

Assumptions

The epistemological foundation that informed this research was constructivism. This means that the knowledge emerging from this research involved interactive collection processes, the interpretation of findings, resulting in “partially generalizable and contextually bound” (O’Callaghan, 2016, p. 538) findings. An example of the interactive collection process is the adaptation of the interview guide as new knowledge was co-constructed with participants during the interview process. Another assumption for this research was that key modulation is a musical element that can be used purposefully in music therapy practices to address various clinical goals. It was assumed that Canadian music therapist perspectives may contribute something unique to the conversation given the diversity of approaches that music therapists bring into their music therapy practices.

Key Terms

Key modulation refers to the shift from one musical key to a different musical key (Kostka et al., 2012). *Key modulation* is defined in this paper within the western tonal system of twelve major keys and twelve minor keys (Kostka et al., 2012). A *Music*

Therapist is defined by the Canadian Association of Music Therapists as an individual who has completed “a Bachelor, a Graduate Certificate, [or a Graduate Diploma] in Music Therapy and a 1000-hour supervised clinical internship” (CAMT, 2016). *Clinical Musicianship* is defined as the use of music and musical elements by a music therapist with therapeutic intent during music therapy experiences (Bruscia, 2014; Nordoff et al., 2014). *Clinical improvisation* is defined as a process where the therapist and the client relate to one another through improvised music (i.e., music that is created spontaneously; Bruscia, 1987).

Overview of Chapters

This first chapter has provided an introduction by situating the researcher, the need for the research and provided definitions of key terms. The scope and delimitations of the research as well as assumptions of the research were provided. The second chapter presents research and other scholarly literature on key modulation from the fields of music theory, music perception and music therapy. Possible reasons for the clinical use of key modulation found in the music therapy literature are presented. The third chapter of this manuscript outlines the methodology chosen for this research and provides information on the participants, materials, data collection and data analysis. Relevant ethical issues surrounding the research are also discussed. The fourth chapter presents the results of the analysis of the interviews. The final chapter of the thesis provides a discussion of the results, outlines implications for practice and education, and recommends the next steps for further inquiry into the topic.

A Musical Note

Musical examples are provided throughout this thesis. In addition, a playlist of songs containing key modulation is available as a link on the Spectrum Research Repository. I encourage you to listen to these examples as supplementary materials to enhance your reading experience.

Chapter 2. Literature Review

In the musical podcast *Switched on Pop*'s episode "How Beyoncé to The Beatles Modulate Your Emotions" (Sloan & Harding, 2016), special guest Dru Cutler compared musical keys to apartments and key modulation as moving from one apartment to another. There can be elements that are similar such as the layout of the apartment or the kitchen appliances, but there are always differences from one apartment to the next. As the fields of music theory, music perception and music therapy are explored in how they define and qualify key modulation, I encourage you to refer to this metaphor as a frame for understanding the intricacies of this musical element. The next portion of the literature review synthesizes the reasons for using key modulation using information from each of these fields. Lastly, the use of key modulation in music therapy practice in Canada is addressed.

Terminology

Various terms are used in literature to refer to this phenomenon, including tonal modulation, modulation, and key change. Modulation is a term used that not only refers to key modulation, as it also refers to metric or rhythmic modulation in music theory literature. Rhythmic or metric modulations are a shift of the rhythm or meter and are topics that warrant their own investigation. The term key modulation will be used for the rest of this thesis to describe a harmonic shift to a different key, or as in the metaphor, for moving from one apartment to the next.

Music Theory and Key Modulation

Key modulation is found in western classical music, jazz as well as countless popular music genres such as rock, country and pop (Kostka et al., 2012). Many of the world's favorite pieces of music feature key modulation. Some particularly salient examples include "Wouldn't it be Nice?" by the Beach Boys (Beach Boys, 1966) and Chopin's "Fantasie-Impromptu" (Chopin, 1855). Many pieces of western classical music end in the same key that they start in after including different key modulations (West-Marvin & Brinkman, 1999) reinforcing the idea of key modulation as a home base like the apartment metaphor referred to by Cutler (Sloan & Harding, 2016).

Music theory is defined as the study of the elements of music including melody, harmony, rhythm and form. (Fallows, 2011; Palisca & Bent, 2001) In the entry level

professional music therapy competencies, there are music theory requirements including the need to understand the musical and formal elements of music (Canadian Association of Music Therapists, 2016). For the purpose of staying within the scope of a Master's thesis and the literature found on key modulation specifically, common key modulations used specifically in western classical music and popular music will be reviewed.

Common Key Modulations in Western Classic Music

Throughout the history of western classical music, various key modulation techniques have been used and developed, three of which will be reviewed in this section: Common chord modulation, sequential modulation, and altered chord modulation. Tonicization is also addressed given that tonicizations are often mislabelled and confused for key modulation.

Common chord modulation. The common chord modulation or a diatonic modulation is a technique where a chord that is found in the scales of both keys is used to shift to the new key (Kostka et al., 2012). An example of this is using the chord E minor to shift from C major to G major. The E minor chord is found within the keys of C major and G major, which creates a smooth transition from one tonal centre to the new tonal centre, unlike some of the other modulation techniques. A variation of the technique is common tone modulation and uses a common tone to shift to the new key (Kostka et al., 2012). An example of this is using the note E to shift from the key of C major to the key of G major. The use of the common tone modulation in this case facilitates less of a smooth transition than the common chord modulation since a single tone is being used to modulate to the new key rather than a chord that consists of three or more notes that are common to both keys. However, both the common chord modulation and common tone modulation create smooth transitions for the listener. (Kostka et al., 2012). If we return to the apartment metaphor, common chord modulations are akin to going to a well planned out dinner party at your friend's apartment. The apartment is similar to your own and there may be some unfamiliar people there, but you know enough people to comfortably socialize and settle in.

Sequential modulation. The sequential modulation uses a musical sequence to shift to a different key. A common example of a sequential modulation is the circle of fifths (Kostka et al., 2012), which is defined as modulating keys "by ascending (for sharp

keys) or descending (for flat keys) intervals of a fifth” (Merriam Webster, 2020, para. 1). The circle of fifths or other sequences used to shift key provide a container for the modulation. The sequential modulation uses the musical sequence to shift to a new key by transposing the sequence up or down by an interval. The transposition of the melody creates a smooth transition for the listener by providing familiarity during the key modulation. An example of a sequential modulation can be commonly found in choir warmups. The same phrase is repeated and transposed up or down by a semitone each time.

Key modulations can be analyzed as common chord modulations in addition to being a sequential modulation. A sequential modulation can be compared to visiting the apartment directly beside your own at the same scheduled time. There is an established pattern and schedule to when the visit occurs and there is a clear sequence of events that leads to the apartment visit.

Altered chord modulation. Altered chord modulation involves modulating with a chord that is only found in the key that is being moved to. This technique clearly indicates the change in tonal centre. A direct modulation is a technique where no common notes or chords are used to pivot to the new key. It is often called a phrase modulation because this can occur in between two phrases, and used to suddenly change key. (Kostka et al., 2012; Schachter, 1987) This type of modulation can be used to stimulate the attention of the listener (Kostka et al., 2012). Within the apartment metaphor, altered chord modulation can be compared to a holiday party where different apartments host the main course and dessert. The transition between the two might be sudden and disorganized and, all of a sudden, the gathering has moved to a new apartment featuring a new cooking style.

Tonicizations. Schachter (1987) examines the concept of the tonal centre in relation to key modulation, highlighting that “a piece that struggles to achieve its tonic presents a world of sound and feeling very different from one where the tonic is asserted as a given from the outset” (Schachter, 1987, p. 291). Music theory also differentiates between modulating to a new key and short portions of music that imply a different key. The difference between the two is the establishment of a new tonal centre in the case of a key modulation. In contrast, tonicizations are of short duration and, although in a

different key, they are not defined as key modulations (Kostka et al., 2012). The effect of these tonicizations is felt in the experience of the piece, but in a different way than a key change where a new tonal centre has been established. When considering the apartment metaphor, tonicizations would be like someone knocking on a neighbour's door to drop off cookies. When talking to the neighbour, there might be a brief glimpse into their apartment, but you have not actually walked into the apartment.

Common Key Modulation in Pop Music

In popular music, various methods of categorizing key modulation have been used. In this section, the nomenclature proposed by music podcast "Switched on Pop" will be used to explore 3 common key modulations found in popular music: the diva modulation, the cathartic modulation and the narrative modulation. Final chorus modulation is another category of key modulation discussed. The ways in which these modulation techniques are perceived by the listeners as well as how composers use key modulations for different purposes are also discussed.

Cathartic Modulation. The cathartic key modulation is used at a key climactic moment of the song (Sloan & Harding). "Perfect Illusion" by Lady Gaga (2016) is another example of a cathartic modulation with the key modulation occurring at a key climactic moment of the song. The song details that a relationship was not what it seemed and was merely a *perfect illusion*. The key modulation occurs at a point that highlights the catharsis of this realization and empowers the vocalist in that realization.

Diva Modulation. Modulation up by a semitone as is done in Beyoncé's "Love on Top" (Knowles, 2011) has the effect of not only allowing the vocalist to shine (referred to as the diva modulation) but of intensifying the message and impact of the song itself (Sloan & Harding, 2016). Modulating the key upwards is used to highlight the vocal range of the vocalist in Beyoncé's "Love on Top" (Knowles, 2011) through four key modulations. A diva modulation also brings a song to the next level by placing the key modulation at the final chorus of a song. Songs that are classified as a diva modulation can additionally be classified as a narrative modulation.

Narrative Modulation. Beyoncé's "Love on Top" (Knowles, 2011) is categorized as a narrative modulation in addition to a diva modulation since through modulating the key upward by a semitone four times, the uplifting message is

emphasized (Sloan & Harding, 2020). In this context, key modulation can also be used to strengthen the storytelling nature of the music such as “Lovefool” by The Cardigans (1996) and “I Walk the Line” by Johnny Cash (1956) (Sloane & Harding, 2016). In the song “Lovefool” (The Cardigans, 1996), the verses of the song are in A minor. Each time the chorus starts, the song modulates to A major. When contrasting the lyrics of these two parts of the song, the key modulation is highlighting a narrative shift with the inclusion of a musical shift. Christopher Doll (2011) examined examples of popular music that modulate by less common intervals including “Paparazzi” by Lady Gaga (2008) which modulates by four semitones. It also serves as an example of a narrative modulation with the key modulations occurring in between the verse-chorus.

Final Chorus Modulation. Key modulation in popular music has also been examined by musicologists (Griffiths, 2015; Metzger, 2012; Ricci, 2017). Modulation upwards by a semitone or tone in the last chorus or portion of the song is given particular attention. The tendency to modulate the last chorus or portion of the song is referred to by a variety of different names. These include the crowbar modulation, pump up, truck driver’s modulation, arranger’s modulation, elevating modulation, shift modulation and direct-stepwise modulation as listed by Adam Ricci (2017). David Metzger (2012) discusses the prevalence of modulation upwards by a semitone or whole step in power ballads. As mentioned with the diva modulation, (Sloan & Harding, 2016) the key modulation in these power ballads serves as an opportunity for the vocalist to display their range. In the case of a power ballad, the message is also intensified by the restatement of the chorus in a higher key. Metzger (2012) however also notes that the prevalence of the key modulation in power ballads can be considered cliché which is emphasized by the negative responses that many music critics and musicologists express (Ricci, 2017; Griffiths, 2015).

The prevalence of key modulation in popular music may also be of relevance to music therapists as the structures of popular music are used by music therapists in compositional music therapy experiences. The preferred music of music therapy clients is often in the category of popular music genres rationalizing its relevance to music therapists.

The three most common key modulation techniques in western classical music were reviewed. The ways that these key modulations are perceived by the listener, as well as the purpose that they may be used for was discussed. This was followed by a review of the literature discussing key modulation found in popular music. Musicologists' perspectives on key modulation in popular music as well as common intervallic modulations were reviewed. In the following section, findings on key modulation within the field of music perception will be presented.

Music Perception and Key Modulation

Tonal Modulation is the term used in the study of music perception to describe shifting to a different key (Zhang, J. et al., 2016; Wen & Tsai 2017; Koelsch et al., 2002, 2003; Janata, 2002, 2009). For the sake of clarity and consistency, it will be referred to as key modulation throughout the remainder of this manuscript. Five main topics will be addressed in this section including the brain structures involved in key modulation perception, one's awareness of key modulation, the perception of key modulation and its relation to the tonic, affective responses to key modulation, and research considerations.

Brains Structures Involved in Key Modulation Perception

Studies in music perception concerning key modulation have focused on mapping the structures in the brain that respond to different types of key modulation (Janata, 2002, 2009; Koelsch et al., 2002, 2003; Wen & Tsai 2017; Zhang, J. et al., 2016). While the perception of key modulation is not fully understood yet, Wen and Tsai (2017) cite the many brain structures found to be activated by key modulation. These include the anterior negativity, the left inferior frontal cortex, the limbic systems, and several subregions of the frontal cortex (Wen & Tsai, 2017). Studies in music perception have used different methods to test modulation including the use of short chord progressions (Koelsch et al., 2002, Radchenko et al. 2018), chorale based harmonic progressions (Korsakova-Kreyn & Dowling, 2014), time limited chord progressions (Radchenko et al. 2018) and real musical excerpts (Korsakova-Kreyn & Dowling, 2014, Radchenko et al., 2018; West-Marvin & Brinkman, 1999). It is unclear whether specific types of key modulations affect specific brain structures. More information regarding research considerations in music perceptions studies can be found at the end of this section.

Awareness of Key Modulation

The awareness of key modulation has been of particular interest to music perception researchers because key modulation is found in much of the music that is consumed including classical music, musicals, jazz, movie score music and other popular music. It is important to note that western musical bias may have influenced research of key modulation. An example of a study that examined awareness of key modulation with short sequences of chords used five chords in each sequence (Koelsch et al., 2002). The participants in this study were ten non-musicians who were asked to focus on detecting clusters and deviant instruments. Within the study, a non-musician was defined as someone who had never taken instrument or singing lessons and had no special musical training. The study investigated the cortical processing of harmonically deviant clusters and instruments that were related to the task and cortical processing of the unexpected key modulations. However, results indicated that there was distinct activation in non-musicians in response to modulating sequences. This was significant since it showed that non-musicians were able to implicitly differentiate between the sequences that modulated to a different key and the sequences that remained in one key. Koelsch et al. (2002) suggested that this signifies the sensitivity of the brains of non-musicians to modulating sequences. It is important to note that the participants in the study were not forewarned of the inclusion of key modulation. This raises the question of whether or not factors of anticipation and forewarning would have an impact on one's perception of key modulation.

Other studies considered the impact of one's musical experience on music perception. Straehley and Loebach (2014) looked specifically at modes which are a group of notes akin to a scale (Powers et al., 2001) Major and minor scales are examples of modes that are frequently used in classical music. A study on emotions and the influence of mode found that "[m]odes had specific emotional connotations that were largely consistent across musically experienced and less experienced participants" (Straehley & Loebach, 2014, p. 30). This finding is similar in supporting the affective responses to key modulation that occur in people regardless of their level of experience. Awareness of key modulation is something that may be of particular interest to music therapists. An awareness of key modulation regardless of musical training suggests that there is some type of response to key modulation in the clients of music therapists. The brain structure

activation and emotional response to different modes also suggest that regardless of musical training, human beings possess innate abilities to process music and its various elements. The response to musical elements and their changes as shown by Strahley and Loebach (2014) and Koelsch et al. (2002) are examples of how using and changing of musical elements may be done in a purposeful way.

Perception of Key Modulation Based on its Relation to the Tonic.

The context or “perceived” strength of the modulation is also considered in a study by Radchenko et al. (2018). In examining tonal modulation, Radchenko et al. (2018) used modulations to the subdominant, dominant and minor sixth to determine if there were differences in participants’ responses based on the strength of the key relationship. An electroencephalogram (EEG) was used to analyze the participants’ responses to modulations executed via both harmonic progressions and fragments of musical compositions (Radchenko et al., 2018). The participants had differing responses with key modulation to the dominant, which can be related to the circle of fifths. They also noted that there was a longer after-effect in the EEG for the musical fragments as compared to the harmonic progressions that were used (Radchenko et al. 2018). The longer after-effect in the EEG for the musical fragments indicates that the artistic features found in the musical fragments had a longer impact for the listener rather than the use of a harmonic progression. For the musical fragments used, there was a significant difference in how participants responded to the key modulation to the dominant key rather than to the submediant key or the subdominant key. (Radchenko et al., 2018). This difference was that more cortical resources were used to process the modulation to the dominant key than the modulation to the subdominant or submediant keys (Radchenko et al., 2018). From the perspective of a music therapist, these findings imply that different effects for clients could be observed depending on not only if a key modulation is used but also the intervallic distance between the two keys in the key modulation. Radchenko et al. (2018) suggest that a possible explanation for this observed phenomenon might be the harmonic relationships between the intervals.

Affective Responses to Key Modulation

Korsakova-Kreyn and Dowling (2014) conducted a study on the affective responses to tonal modulation and provide insights into the perception of modulation.

Korsakova-Kreyn and Dowling (2014) were also interested in how varying levels of musical training did or did not impact modulation perception. As a part of their study, they conducted two different experiments. In the first experiment, the primary investigator composed eleven different progressions containing key modulations. There were four different types of key modulations using eight different chords: major to minor, major to major, minor to major and minor to minor. In the second experiment, a mixture of original harmonic progressions and pre-composed classical piano musical fragments were used. The distance of the tonal modulation as well as the melodic contour of the soprano line as the modulation was approached, were considered in the composition of the progressions and choice of musical fragments used. The affective response variables were measured using six bipolar scales: valence (happy/sad and pleasant/unpleasant), potency (strong/weak and firm/wavering), and sensory (warm/cold and bright/dark) (Korsakova-Kreyn & Dowling, 2014). An important finding that emerged from these two experiments was that the distance of the modulation had an effect on the affective responses of participants. Specifically, it was noted that responses to modulations of a perfect fourth or fifth interval resulted in less physical tension in the participants than key modulations of other intervallic distances. This was analogous to the affective responses experienced by the participants as the authors claimed that “listening to music activates in the listener the simple mechanism of perceived tension, and this results in a ‘reconstruction’ of a complex emotion” (Korsakova & Dowling, 2014, p. 18).

Research considerations

It is important to acknowledge that the music perception field is a highly specialized field and that further advances will allow new methods of investigation to enhance our understanding of key modulation perception. This section will address some of the main limitations and research considerations of the research reviewed above. As mentioned previously, studies in music perception have used different methods to examine key modulation including the use of short chord progressions (Koelsch et al, 2002, Radchenko et al. 2018), chorale based harmonic progressions (Korsakova-Kreyn & Dowling, 2014), time limited chord progressions (Radchenko et al. 2018) and real musical excerpts (Korsakova-Kreyn & Dowling, 2014; West-Marvin & Brinkman, 1999;

Radchenko et al. 2018). The use of different methods to examine how key modulation is perceived makes it difficult to compare and contrast findings.

For example, Korsakova-Kreyn, who co-authored the double-experiment study presented earlier, is both a neuroscience researcher and a classically trained pianist. Their classical music background informed the composition of the chorale-based progressions and the real music excerpts used in the second experiment (Korsakova-Kreyn & Dowling, 2014). Each of the real music excerpts used in the study were solo piano pieces meaning that only piano timbres were included. Timbre is the musical element used to describe the sound qualities of the instrument(s) used in a piece of music. Each instrument has differing timbres and the combination of instruments creates differing timbres (McLachlan, 2016). This brings up the role of timbre in key modulation and questions for how these findings are generalizable across instruments with varying timbres. The use of different musical methods within the same study to test the perception of key modulation also highlights the difficulty in isolating all of the musical elements other than key modulation that may be affecting the perception of the participants.

Some studies that focus on brain structures activated in the process of modulation have differing foci and standards of rigour in describing the musical elements that were used. Additionally, many of these studies used short excerpts of chords before shifting to a new key. This limitation may not fully allow participants to be centred in the musical key before shifting to a new one. The lack of time centring the participant in the musical key before modulating to a new key may have had an impact on the awareness that a key modulation has occurred as well as the affective responses to the modulation itself. This is particularly important given that studies show the capacity of research participants to recognize that a key modulation has happened, regardless of musical training.

In summary, key findings in relation to key modulation from the field of music perception included the awareness of key modulation by both non-musicians and people with formal musical training (Koelsch et al., 2002; Straehley & Loebach, 2014). The reviewed literature also indicated the importance of the intervallic distance between the two keys in a key modulation as influencing the listener's experience. While it is still unclear how different types of key modulation are impact the brain, the main brain

structures involved in its perception are the anterior negativity, the left inferior frontal cortex, the limbic systems, and several subregions of the frontal cortex. Music therapists work with people with formal musical training as well as people without formal musical training. Affective responses to key modulation showed that participants responded to key modulations with less tension when modulating to the perfect fourth or fifth keys. The next section of this literature review will examine how the music therapy literature addresses key modulation.

Music Therapy and Key Modulation

We have thus far reviewed key modulation from the music theory and music perception perspectives. This section will examine the current literature on the use of key modulation in music therapy using Bruscia's (2015) classification of music therapy methods: re-creative, receptive, compositional, and improvisational. Various specialized music therapy models and approaches emphasize the importance of the purposeful use of musical elements, including Nordoff Robbins Music Therapy (also referred to as Creative Music Therapy; Nordoff & Robbins, 2007), Aesthetic Music Therapy (Lee, 2003), and the Bonny Method of Guided Imagery and Music (Bonny, 2002). These have been integrated in this review. A summative section will outline current rationale for the clinical use of key modulation. A final section will highlight the relevance of Canadian perspectives as it pertains to this research study.

Re-creative Music Therapy Methods

Re-creative creative music therapy methods are defined as the reproduction of any type of musical content that has already been created (Bruscia 2015). Music therapists use music from a variety of different genres. It was previously mentioned in this literature review that key modulations can be found not only in classical music but in popular musical genres. The use of client preferred music is discussed in the music therapy literature providing one rationale for the application of re-creative music therapy methods (Fletcher, 2018). Due to the prevalence of key modulation in popular music genres, clients may request songs or pieces that include a key modulation. However, it is unclear how music therapists approach key modulations within re-creative music therapy experiences. This is due to a lack of information in the music therapy literature on whether key modulations in these songs are included when they are used in music therapy

sessions. Furthermore, it is not known whether or not there is any impact on the client's experience of a familiar or favorite piece of music if the usual key modulation is not included.

Receptive Music Therapy Methods

Receptive music therapy methods are defined as musical experiences that people respond to through a non-musical medium such as listening, movement or art. This includes relaxation experiences, as well as imagery-based experiences. Grocke and Wigram (2007) contrast some of musical differences between relaxation and imagery experiences in *Receptive Methods in Music Therapy: Techniques and Clinical Applications for Music Therapy Clinicians, Educators and Students*. They note the importance of predictability in the elements of music in music for relaxation whereas music used for imagery may have less predictability to stimulate imagery. This suggests that key modulation may not be commonly used with relaxation experiences since key modulation can be defined as unpredictable.

The Bonny Method of Guided Imagery and Music (GIM)¹ highlights the importance of being aware of musical elements. Bruscia discusses the importance of the guide familiarizing themselves with the music that is being used in GIM. There are several rationales provided to support the importance of being aware of the musical elements. One rationale for analysing everything that is occurring musically in a piece is to be aware of the potential imagery that the traveller may experience. He states that "It is unethical to present music that the guide has not heard or studied adequately beforehand" (Bruscia, 2015, p. 131). As such, *Notes on the Practice of GIM* (Bruscia, 2015) lays out the musical elements to examine in each piece found in a program. These musical elements include texture, timbre, volume, pulse, rhythm, melody, harmony, style and tonality. Tonality is listed as an important element to influence the music and

¹The Bonny Method of Guided Imagery and Music was developed by Helen Bonny. In this method, trained therapists "choose classical music sequences that stimulate journeys of the imagination. Experiencing imagery in this way facilitates clients' integration of mental, emotional, physical and spiritual aspects of well-being" (Association for Music and Imagery, 2020, para. 1). In this method the therapist is often referred to as the guide and the client is referred to as the traveller (Bonny, 2002).

imagery experience since “Tonality is a motivational [centre] for emotions and ideas- the home base, the resting point or gravity source: it provides an emotional [centre] and motivational direction” (Bruscia, 2015, p. 139). Key modulation is included in these through the questions that the guide should ask themselves when analysing the piece. The guide is told to ask whether the tonality of the piece is “stable or modulating” (Bruscia, 2015, p. 136), highlighting the importance for the guide to be aware of the tonality of the music that is part of the GIM programs.

Compositional Music Therapy Methods

Compositional music therapy methods can be defined as the creation of new musical content with the goal and intent of an end product (Bruscia, 2015). This includes the creation of new lyrics set to an already existing piece of music and therapeutic songwriting.

Baker and Wigram (2005) define therapeutic songwriting as “the process of creating, notating and/ or recording lyrics and music by the client or clients and therapist within a therapeutic relationship to address psychosocial, emotional, cognitive and communication needs of the client” (p. 16). Baker (2015) discusses how musical and lyrical elements contribute to conveying the meaning and message intended in a song. An example is given of using certain melodic contours or harmonic elements to highlight a particular word (Baker, 2015). The use of key modulation specifically is not mentioned, however, the use of altered chords to create harmonic tension for the purpose of a strong resolution is discussed (Baker, 2015).

Improvisational Music Therapy Methods

Improvisational music therapy methods are defined as spontaneous music making (Bruscia, 2014) They are used within a variety of different music therapy approaches and models. Given the important contributions made by music-centred orientations to the concept of clinical musicianship, it is important to contextualize this as a possible reason for increased literature on improvisational music therapy methods and key modulation. Within the category of clinical musicianship, clinical improvisation has been one of most discussed in the literature. This is partly due to the literature contributed from music-centred approaches on this specific topic.

Music-Centred Approaches. Music-centred approaches in music therapy consider the importance of the music and specific musical elements in the music therapy setting. (Aigen, 2005). Nordoff Robbins is a music-centred approach in music therapy that requires specialized training. Inspired by Nordoff Robbins is the music-centred approach referred to as Aesthetic Music Therapy (Lee, 2003). Both highlight the importance of understanding the structures within the music and promoting greater attention to the music itself (Lee, 2003). This is evidenced in Robbins and Robbins (1998; as cited by Lee & Houde, 2011) where they suggest that microanalysis of pieces of music used in music therapy can strengthen the practice of music therapists as it is necessary for them to be aware of “the importance and potential therapeutic consequences of every musical component [they] use” (Lee & Houde, 2011, p. 113).

Clinical Improvisation. Another example of the use of modulation in clinical improvisation can be found in Bruscia’s *Improvisation Models of Music Therapy* (1987). In this seminal book, Bruscia (1987) discusses the importance of the therapist’s clinical intent behind each and every note, emphasizing the potential role that the harmonic shift of modulation can play towards therapeutic change. It is also referenced in the Tonal Scales that Bruscia (1987) presents in the Improvisational Assessment Models. In this context, modulation is referred to as a technique that signifies variation in the clients playing. The response to modulation and variation is also assessed in these improvisation assessment models (Bruscia 1987). It can be influenced by the expectations of the client and the way that the modulation itself is approached. In a Nordoff-Robbins (2007) case study, the anticipatory nature of modulation and how certain types of modulation can feel familiar and natural for clients are also discussed.

Accordingly, clinical workbooks focused on the instruction and development of clinical improvisation skills demonstrate the importance of the use of different musical elements in music therapy. These improvisation guides focus on different musical elements including modes, different styles, and rhythms. The improvisation guides also provide the possible clinical uses and rationale for their use. Yet, when it comes to key modulation, the literature primarily focuses on how to modulate to a new key rather than the clinical rationale behind the use of the technique. For example, Lee and Houde (2011) provide practical tools for key modulation in the classical section of *Improvising Styles:*

A Workbook for Music Therapists, Educators and Musicians with the goal of using modulation within sonata form. The classical section of this book specifies particular chords progressions that can be used to modulate by specific musical intervals. Each of these specific examples includes chord progressions to use. However, the different effects or implications of these modulations are not addressed. The book favours modulating upwards rather than downwards, but the clinical rationale for this is not explicit. It is possible that this tendency has been informed by the clinical experiences of the authors. Further research is needed to better understand the clinical use and therapeutic potentials of upward or downward modulation.

The Use of Key Modulation in Clinical Improvisation. There are varying perspectives in the literature on why key modulation might be used. This section combines what has been discussed in each of the prior sections.

Key modulation can be used to redirect and stimulate attention, as well as to promote focus. Bruscia (1987) cites “modulation” as a redirection technique in chart 64- Clinical techniques in *Improvisational Music Therapy* (Bruscia, 1987). He describes modulation as a redirection technique that is less abrupt than some other redirection techniques and presents a new perspective or attitude rather than a subject change (Bruscia 1987). Although Bruscia did not identify specific types of key modulation, Kostka et al. (2012) noted that common-chord modulations can be perceived as smoother than other key modulations in western classical music theory.

Inspired by Bruscia’s *Improvisational Models of Music Therapy* (1987) is Carroll and Lefebvre’s *Clinical Improvisation Techniques in Music Therapy: A Guide for Students, Clinicians and Educators* (2013). Key modulation is also listed as a clinical technique under the category “Guide the client toward greater freedom of expression” (Carroll & Lefebvre, 2013, p. 13). Key modulation is also described as a tool for expression (Korasova-Kreyn & Dowling, 2014) in classical music presenting a reason for the use of key modulation. The commonality between these perspectives suggests that modulation is used as a tool of emotional expression. Carroll and Lefebvre (2013) also suggest that key modulation can be used to “stimulate new responses by offering the client new experiences” (Carroll & Lefebvre, 2013, p. 24) and that it can be used to move from one mood to another. An example of key modulation being used to move from one

mood to another can include moving from a sad emotion in a minor key to a happy emotion in a major key.

Nordoff and Robbins cite the clinical case of Pernille in their book *Creating Music Therapy: A Guide to Fostering Clinical Musicianship* (Nordoff & Robbins, 2007), highlighting the potential for key modulation to offer new experiences. They suggest that the modulation “added to the range of her tonal emotional experiences the sensation of being shifted from one firmly stated tonality to another” (Nordoff & Robbins, 2007, p. 233). The key point of shifting from one home base to another highlights the need for the modulation to be done in a way that supports the client.

Although Wigram’s *Improvisation: Methods and Techniques for Music Therapy Clinicians, Educators and Students* (2004) book is a significant publication on the topic of clinical improvisation, key modulation is briefly mentioned. In Gardstrom’s *Music Therapy Improvisation for Groups: Essential Leadership Competencies*. “Modulating” (Gardstrom, 2007, p. 115) is mentioned in relation to redirection but is not further explained.

In summary, key modulation information found in the music therapy literature primarily outlined the practical ways in which key modulation can be carried out, as opposed to the ways in which it can be used with therapeutic intent. Key modulation is discussed sparsely within each of the different types of music therapy experiences (re-creative, receptive, compositional and improvisation) particularly re-creative and compositional. Clinical considerations regarding the impact of key modulation within receptive music therapy methods such as GIM included the therapist’s understanding of the imagery-related potential of key modulation. Rationale for the use of key modulation in clinical improvisation included fostering freedom of expression, offering new experiences and increasing attention. These findings suggest the need for an integral understanding of the therapeutic potential of key modulation. The next section discusses the role that Canadian perspectives may play in expanding our understanding of this topic.

The Use of Key Modulation by Canadian Music Therapists

There is a gap in the literature concerning the use of key modulation in music therapy practice in Canada. In the education of music therapists in Canada, practical

improvisation books provide little information on clinical rationale for the use of modulation in music therapy. Each of the improvisation books discusses modulation and include various ways to learn to modulate (Nordoff & Robbins 2007, Lee & Houde 2011, Carroll & Lefebvre, 2013). The use of key modulation and associated clinical rationale is discussed to varying degrees in training programs, depending upon the philosophy or the program and/or particular instructors. There is no established resource or approach for addressing this topic.

Improvisation courses are taught in the vast majority of the music therapy training programs around the world (Kavaliova-Moussi, 2014). As such, all Canadian music therapy training programs offer improvisation courses (Acadia University; 2020; Canadian Mennonite University, 2020; Capilano University, 2020; Concordia University, 2020; University of Toronto, 2020; Wilfrid Laurier University, 2020). Some programs prioritize a music-centred perspective, some include it as one perspective within a range of valued perspectives, yet but all programs value improvisation. It is also important to note that Canadian perspectives on clinical musicianship are informed by the diverse music therapy practices of Australia, the United Kingdom, as well as the United States of America (Curtis, 2015; Kruger, 2019). This suggests that Canadian music therapists may be a good group to seek information from, since they are likely to have diverse perspectives on the use of key modulation in clinical practice. This is ideal in the context of an exploratory qualitative research.

In sum, the music therapy literature that includes key modulation was created with the intent of being used as a practical resource for educators. However, to date, there is a lack of research-based articles in the music therapy literature discussing key modulation in clinical practice. Investigating how practicing music therapists in Canada are using the musical element of key modulation in clinical contexts may provide rich and diverse insights into this topic.

Conclusion

The musical element of key modulation was investigated using literature from the fields of music theory, music perception and music therapy. Different ways of modulating to a new key were discussed in the music theory section of the literature review. The methods differed in the perceived ease of transition to the new key

corresponding with the purpose of their usage. The awareness of key modulation regardless of musical training was a key finding in the music perception section. Within the field of music therapy, more literature on the use of key modulation was found in relation to receptive and improvisational music therapy methods. Clinical improvisation workbooks presented perspectives on the use of key modulation, but little to no research-based articles supported these claims. It is important to consider the different modulation techniques and their implications in music therapy since different modulation techniques are used for different purposes. The consideration of this factor is important in contemplating the use of key modulation in clinical practice as these different techniques may support different therapeutic goals. The sensitivity of non-musicians to modulation presents a hypothesis that modulation could be useful in the field of music therapy where music elements are used to elicit therapeutic change with musicians and non-musicians alike. However, these findings only provide possible support for its use in clinical practice warranting the need for further inquiry.

Chapter 3. Methodology

Design

To answer the research question, a modified grounded theory methodology was used. Grounded theory is a series of methods that set guidelines for the collection and analysis of data with the purpose of creating a theory (O'Callaghan, 2016). Data analysis in grounded theory is rigorous and includes coding, memos and aims to generate theory (Amir, 2005). A theory or whole is generated when saturation is reached which will not be the case for this inquiry. Modified grounded theory is when portions of grounded theory are used but are modified and the aim is no longer to generate a theory. A modified version of grounded theory can be used for the goal of “systematically develop(ing) a full description of the phenomenon under study or to generate more information about a phenomenon” (Amir, 2005, p. 374). This information can then be used to generate a theory with additional research (Amir, 2005). Due to the lack of music therapy studies specifically addressing key modulation, modified grounded theory was chosen as it is an inductive approach suitable for examining topics on which little is known. The use of modified grounded theory will aid in learning more about the use of key modulation by accredited music therapists in Canada.

Participants

Three participants were included in this study. As more than three people expressed interest in participating in the study, the first three participants to express interest were selected to complete the semi-structured interview about their use of key modulation in music therapy. The participants were Certified Canadian Music Therapists who had two or more years of experience in the field of music therapy.

Recruitment Procedures

Before the interviews were conducted, a Summary Protocol Form was sent to the University Human Research Ethics Committee for Ethics approval after approval from the thesis supervisor. After receipt of the certificate of ethical acceptability (Appendix A) was received from the University Human Research Ethics Committee for Ethics approval, an email call for participants (Appendix B) was then sent to the Canadian Association of Music Therapists. Due to insufficient response, the required years of

experience criteria was modified from five to two. An amendment was sent to the University Human Research Ethics Committee and the revised protocol was approved (Appendix C). A second modified email call for participants (Appendix B) was sent to the Canadian Association of Music Therapists who distributed the information to its membership. An informed consent form (Appendix D) was sent to participants who expressed interest prior to the interview. The interview guide (Appendix E) was also sent to participants before the interview to encourage prior reflection on the questions.

Materials

Materials used in the research included two recording devices to record the interviews with participants. Depending on the interview format, the researcher's telephone or laptop was used to conduct the interview. The interviews were transcribed using the researcher's password-protected laptop. Further information on the ethical treatment of research data is provided subsequently. A semi-structured interview guide and informed consent were created and evaluated.

Data Collection

When potential participants responded, confirmation that they met the inclusion criteria was obtained through email correspondence. The first three participants who responded that met the inclusion criteria were selected. Prior to the interview, participants were asked to read through and sign an informed consent form. A semi-structured interview with each of the three participants was then scheduled and conducted. In addition to the consent form, a semi-structured interview questionnaire was sent in advance of the interview to participants. The semi-structured interview questionnaire was used to guide participants while encouraging participants to answer freely and explore the topic (Hesse-Biber, 2017). These interviews were thirty to sixty minutes in length and took place over the online platform Zoom or over the telephone. One participant elected to take part in the interview over the telephone and the other two participants elected for their interview to be conducted through Zoom. A respondent validation technique where the interviewer summarizes the answers of the participants to check understanding (Frey, 2018) was used during the interviews. The audio data was collected using two separate recording devices, such as a Zoom H2n SD card audio recorder. The audio files were then transferred onto the hard drive of a password protected computer, as well as onto a

password protected stand-alone hard drive before being erased from the SD Card of the audio recorders. The audio recordings were not saved using any cloud storage. The audio recordings were transcribed, and were saved using a password protected document. Once the transcription of the interview was complete, the audio files, as well as the transcripts of the interviews were stored on a password protected computer. A copy of the transcripts and audio files were kept on a password protected hard drive in case of any technical issues with the password-protected computer containing the research data.

Data Analysis

The interviews were first transcribed and then the data was analyzed using a coding process as outlined by Neuman (2006). According to this process of coding, three rounds of coding (open, axial and selective) were completed (Neuman, 2006). The open coding used in this study was inductive, meaning that the codes were created through data analysis (Amir, 2005), rather than being predetermined. Axial coding was used to group the initial codes that were found during open coding (Neuman, 2006). Selective coding was used to finalize the organization of the codes under the main themes and concepts (O'Callaghan, 2016). In one interview, a participant shared musical examples and these were also transcribed and included in the same way quotes were to help ground the interpretations in the data.

Ethical Considerations

A variety of procedures were used to ensure the protection of the confidentiality of the participants. The informed consent form (see Appendix D) detailed what the research entailed, the risks and benefits of participation and how the responses of the participants would contribute to the research. The form covered how participants could withdraw from the study if they so chose, and contained information on how they would learn about the results. Participants were also asked to verbally re-confirm their consent to participate in the study at the beginning of the scheduled interview.

Research During A Pandemic

The second recruitment process for participants and interviews took place during the COVID-19 pandemic. Given the situation, the researcher demonstrated caution in following up with participants to determine whether they still would be comfortable and interested in participating in the research. This meant that two of the interviews were

conducted during the physical distancing measures of the COVID-19 pandemic. All interviews were conducted by phone or via teleconference, therefore respecting the physical distancing measures in place at the time.

Chapter 4: Results

This research study investigated the use of key modulation by Canadian music therapists. This chapter begins with general background information on each of the participants to help contextualize the findings. Three certified music therapists participated in a semi-structured interview over the phone or video chat platform. The data was analyzed according to Neuman's method of coding. Five themes emerged out of the analysis process: key modulation was used as (a) a source of change (b) to enhance the aesthetic experience, to (c) encourage connection, to (d) support emotional experiences, and as an expression of the (e) therapist's musical path. Each theme and its respective subthemes (when applicable) will be reviewed. Quotes from the research participants will be used to corroborate the researcher's interpretation of the findings. Highlights from these research findings are further discussed in the final chapter of the thesis.

Participants Background Information

Each participant was asked about their educational and musical background, the primary populations they were working with and the instruments that they commonly used in their clinical work. A pseudonym was chosen for each of the research participants. Some background information shared by the participants has not been included to protect their anonymity.

Denise

Denise is a certified music therapist with over fifteen years of experience. She had attained a performance degree as well as Bachelor and Master of music therapy degrees. She listed her primary instrument as piano and listed piano, guitar, drums and bass as the main instruments that she uses in her music therapy clinical practice.

David

David is a certified music therapist with four years of experience. He had attained a Bachelors degree in performance and composition, as well as a Master of music therapy degrees. David works primarily in hospital settings and with adults with developmental disabilities. He listed guitar, voice, piano and small percussion instruments as the main instruments used in his music therapy clinical practice.

Adam

The third participant, Adam, is a certified music therapist with three years of experience. He has a Bachelor’s of Music, and a Master’s of Music Therapy. Adam works with adults living with Alzheimer’s and Dementia. He also provides music therapy services in mental health care. Guitar was emphasized as a key instrument used in his music therapy clinical practice followed by small percussion instruments and drums.

Thematic Analysis

Various themes emerged through the analysis of the interviews. Three different rounds of coding were conducted; open coding, axial coding and selective coding. The interviews were individually coded in three different rounds and compared. In addition, the primary investigator consulted with the research supervisor to clarify the themes. These were grouped into five main themes with corresponding subthemes for each main theme when applicable. A master table with the themes and subthemes can be found here.

Table 1

Master Table of Themes and Subthemes

| Themes | Subthemes |
|------------------------------------|---|
| A Source of change | Client’s awareness of change To reflect change The “right” amount of change |
| Enhancing the aesthetic experience | Adding/maintaining complexity Authenticity |
| Encouraging connection | Mind and body connection Social connection |
| Supporting emotional experiences | |
| Therapists’ musical path | Learning to use key modulation Using key modulation clinically |

For each theme, there is a table of the subthemes and corresponding quotes to the subtheme. Additional quotes from the research participants are included in the results to further support the research themes. In addition, one of the research participants included

unprompted live music examples. These live music examples have been transcribed and included with the corresponding subtheme to provide context.

Table 2

Theme 1: A Source of Change

| Subthemes | Sample Quotes |
|------------------------------|---|
| Client’s awareness of change | “Movement is the most noticeable one. When I modulate a key, especially when we’re participating in a movement intervention, there seems to always be more movement.” (Adam) |
| To musically reflect change | “I’ve done improvisational experiences too where let’s say you’re doing a walk in the woods type thing where you’re trying to create like a soundscape or something like that. You know modulating can underscore an event that happens and the story you’re trying to tell.” (David) |
| The “right” amount of change | “Maybe we were improvising on a specific motif and perhaps it is no longer giving us what we need. And therefore a key modulation could be enough of a change while still keeping support for the client where something feels that they can maybe take a step forward within a sort of hypothetical way or you know sort of progress um be able to feel that they can achieve something a little more just by simply changing the key.” (Denise) |

Theme 1: A Source of Change

A source of change emerged as a main theme of the research during the coding process when the idea of key modulation being linked to change in its many forms and contexts was found within the interview transcriptions. To begin, we will explore the following three subthemes: Client’s awareness of change, to musically reflect change and the “right” amount of change.

A Source of Change: Client’s Awareness of Change

In thinking about the client’s awareness of change, participants discussed the diverse ways clients showed awareness of key modulation and of change itself. For example, Denise shared that

“One boy that I was working with who every time I changed keys, he would change instruments...For him, it felt like a new song or a new movement let’s say. So, he felt

like it was his time to add something different and he did that again independently”. Participants recalled various non-verbal reactions that their clients had in response to key modulation: increased level of engagement, a shift in body language, eye contact, and increased movement. David shared “I mean you might notice an increased level of engagement.” Adam noted: “Movement is the most noticeable one. When I modulate a key, especially when we’re participating in a movement intervention, there seems to always be more movement.” Denise shared that these non-verbal responses showed that “They’re aware that something has changed and may or may not be aware of what that is but the awareness that something has changed causes a reaction.” She also suggested that the client’s awareness of the musical change via key modulation as a way of addressing emotional goals. Specifically, connecting the awareness of key modulation to awareness of emotion. She explained that

As a goal area it would be sort of a shift in, a shift in emotion, awareness of emotion as well because when you use that within a context it does often alert the client to things that are changing. (Denise)

A Source of Change: To Musically Reflect Change

Musically reflecting change also emerged as a subtheme of a source of change. When discussing how they musically reflected change using key modulation, participants reflected on using key modulation in compositional music therapy experiences to reflect perceived shifts in their clients’ mood and focus. While including the importance of not solely equating major keys with positive emotions and minor keys with negative emotions, David included how key modulation could be used in compositional music therapy experiences saying

I’ll use key modulation when composing songs with people in order to reflect moods. You know, we might have something where we’re writing a song about something happy you know I mean, you don’t want to like stereotype anything but you know you might use major and then something bad happens and you might go to minor.

Key modulation was also noted as a way to reflect a switch of focus to a different person when working with groups. David shared that he would “use a different key for each person because I think that it makes it more of like a, more special as an individual

thing.” In this example, the key modulation is synchronizing with the shift of focus to a different person in the group. The key modulation reflects change by structuring the change as it happens in the experience. Key modulation as a source of change was highlighted as a way to symbolically reflect events within improvisational experiences. In the case of one example given by a participant, key modulation was used to symbolize a change in the story. David shared,

I’ve done improvisational experiences too where let’s say you’re doing a walk in the woods type thing where you’re trying to create like a soundscape or something like that. You know modulating can underscore an event that happens and the story you’re trying to tell.

A Source of Change: The “Right” Amount of Change

Within the theme *a source of change*, examples surrounding careful considerations regarding the amount of change emerged during the coding process. The idea of the “right” amount of change was noted by two of the research participants with key modulation being noted as a way to maintain support through that change. When discussing breaking patterns of rigidity, Denise suggested that,

Maybe we were improvising on a specific motif and perhaps it is no longer giving us what we need. And therefore a key modulation could be enough of a change while still keeping support for the client where something feels that they can maybe take a step forward within a sort of hypothetical way or you know sort of progress um be able to feel that they can achieve something a little more just by simply changing the key.

Another participant discussed the relationship between the original key and the key one modulates to. He discussed the number of notes common between the two keys when discussing median modulations. David emphasized the importance of providing the right amount of change through considering the relationship between the two keys: “it still has a relationship to key but it can create new kind of tension or um you know new moods while still relating back to the original key”.

The importance of monitoring the responses to a key change was also emphasized. Denise noted the potential positive and negative client responses when using key modulation saying “And it could be for positive or negative, it could be a notice of

tension in the body for them all of a sudden or it could be a notice of the opposite a bit of a more relaxed state.”

Table 3

Theme 2: Enhancing the aesthetic experience

| Sub Themes | Sample Quotes |
|---------------------------|---|
| Adding musical complexity | “I would use a modulation to anything from creating excitement within the improvisation to creating calm within the improvisation to it’s a you know to bringing the musical to it that the improvisation needs.” (Denise) |
| Authenticity | “Here’s a great example of a song that modulates all the time I Walk the Line by Johnny Cash...I mean I want to be faithful to the song.” (David) |

Theme 2: Enhancing the Aesthetic Experience

Enhancing the aesthetic experience emerged as a main theme of the research during the coding process when the use of key modulation was used to add to the aesthetic quality of the musical experience for participants. Two subthemes will be explored in this section: adding/ maintaining musical complexity and authenticity.

Enhancing the Aesthetic Experience: Adding/ Maintaining Musical Complexity

Key modulation was used to enhance the aesthetic experience by using key modulation to add musical complexity. Adding/ maintaining musical complexity was included as a subtheme under enhancing the aesthetic experience since the richness of musical complexity can be a way to enhance the aesthetic experience. David discussed his music-centred approach to his clinical practice saying: “I’m a very aesthetic music centred kind of music therapist so I really like to create something that’s aesthetic experience so I think doing that in a composition or in any context, it makes it more rich”. He further clarified his approach adding that: “You don’t want to make it like twelve tone music or something but you know you can give them something rich by using that modulation.”

Adding musical complexity may allow the music therapist to introduce new musical dimensions with the use of key modulation. This was explained by Denise with her sharing “I would use a modulation to anything from creating excitement within the improvisation to creating calm within the improvisation to it’s a you know to bringing the musical to it that the improvisation needs.”

The example of “You are my Sunshine” was shared by Adam to demonstrate the variety that can be added by using key modulation that he would use in receptive music therapy experiences in his clinical practice. He explained:

I really find that modulation adds interest. So, if we’ve heard this same melody

Figure 1

Participant Musical Example of You Are my Sunshine in C Major



Let’s say someone hears that melody 400 times in their life in the same key (*chuckles*). Hearing it move is just musically more interesting.

[Guitar Notation of the opening bars to You Are my Sunshine in C major]

Key Modulation was also used to add musical interest with the addition of new musical material as a way to enhance the aesthetic experience. Adam explained that “I can break that down into um adding interest and movement. So, key modulation for me really gives an influx of new interest. Wow uh something changed and this is uh...this is interesting for me.” In this example, musical interest is used as a way to renew and maintain the client’s focus and attention to the musical experience.

Enhancing the Aesthetic Experience: Authenticity

Authenticity was included as a subtheme of enhancing the aesthetic experience because authentically interpreting key musical elements within a piece, including key modulation, is a way of enhancing the aesthetic experience for participants. The desire to maintain the authenticity of the original song was articulated by each participant as they stated that they would include key modulations that were in the original song. A specific example of a song with key modulation was noted by David “Here’s a great example of a song that modulates all the time I Walk the Line by Johnny Cash...I mean I want to be

faithful to the song”. In terms of authenticity, one participant noted that the key modulation would only be included if it was in the original song and would not add a key modulation. Another participant said that they would consider adding a key modulation that was not in the original. Authenticity to the original work was promoted as a way to create an experience for clients that bore similarity to the original contexts of hearing the song. The authenticity could be used as a way to support client preferences, to convey the full musical complexity of a piece, support reminiscence or to add interest to songs that may have a simpler chord structure.

Table 4

Theme 3: Encouraging connection

| Sub Theme | Sample Quotes |
|--------------------------|--|
| Mind and body connection | <p>“Imagery and music where I’m looking to perhaps help someone to pace their breathing. And by using key modulation each time they take a new breath in its the key modulation feels like uh a new breath each time because it, it is a new adjustment to the ears.” (Denise)</p> <p>“You want them to access their sense of self to become more centred in their sense of self by, by singing um you know by singing and then they’re accessing old memories. And they’re re-establishing themselves in their identity right because people tend to lose that so much...Then using key modulation to help them become more comfortable within the experience could definitely facilitate that goal.” (David)</p> |
| Social connection | <p>“I find that when that modulation can lift, it can really draw people into the current moment. So, in the context of the Alzheimer’s and Dementia patients I work with, a song that stays in this key centre for a good amount of time may really enliven someone’s spirit and bring them into the room by moving the key up.” (Adam)</p> |

Theme 3: Encouraging Connection

Repeated examples of key modulation being used as a way to encourage various types of connection in clinical contexts resulted in encouraging connection as a main

theme of the research. The following two subthemes will be explored: mind and body connection and social connection.

Encouraging Connection: Mind and Body Connection

Key modulation as a way to encourage connection to the mind and body was discussed by each of the participants. They each expressed key modulation as a way to support and encourage connection with parts of the body and the self. The breath was mentioned by David and Denise as something that could be encouraged with the use of key modulation. Denise provided an example:

of imagery and music where I'm looking to perhaps help someone to pace their breathing. And by using key modulation each time they take a new breath in its the key modulation feels like uh a new breath each time because it, it is a new adjustment to the ears.

The use of key modulation to encourage connection with the self was mentioned in relation to David's work with geriatrics and in his hospital work. He suggested that key modulation could support the facilitation of the connection with the self. In the quote below, David shared that

you want them to access their sense of self to become more centred in their sense of self by, by singing um you know by singing and then they're accessing old memories. And they're re-establishing themselves in their identity right because people tend to lose that so much...Then using key modulation to help them become more comfortable within the experience could definitely facilitate that goal.

The use of key modulation as a way to promote relaxation in receptive music therapy experiences was also discussed. Denise explained:

But at the same time if it was something where it was an idea perhaps the intervention or the activity was to be something that was encouraging the client to relax and it's something that we've been working on, I would also use key modulation to go downwards to help the body to feel perhaps relaxed more or to feel a little more settled in the music intervention.

Encouraging connection to movement with the use of key modulation was a theme that came up in all three of the interviews. Denise provided an intervention where

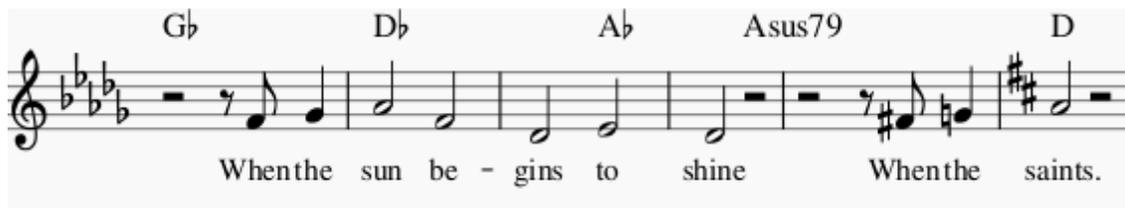
she would link directional movement to key modulation to increase connection to movement in the example below.

Let's say I'm wanting them to raise their arms up as high as they can and wanting them to put their arms down as low as they can. So obviously when they're moving their arms upwards, then I'm encouraging, I would be using a key modulation that would be moving upwards. And, I might be doing it sort of playing a little let's say four bars of something and then modulating and playing that same four bars again, modulating playing that same four bars again. Not only are they being visually cued to put their arms up but now the music is actually encouraging that as well and then doing the opposite on the way back down.

Increased movement was noted by each of the participants when discussing purposes and goals that could be addressed with the use of key modulation. Adam demonstrated a movement intervention with the song "Oh When the Saints Go Marching In" and can be found in the figure below.

Figure 2

Participant Musical Example of "Oh, When the Saints Go Marching In"



[Six notated bars of the voice line with corresponding chord symbols of "Oh, When the Saints Go Marching In". The key modulation from D flat major to D major is shown with an A suspending seventh nine chord in the fifth bar resolving to a D major chord.]

In the figure above, the key was modulated upwards by a semitone after the conclusion of each verse. The dominant chord for the subsequent key was played as a transition to the key modulation. Additionally, he noted that "When I modulate a key, especially when we're participating in a movement intervention, there seems to always be more movement".

Encouraging Connection: Social Connection

Key modulation as a way to encourage social connection was also mentioned as a potential goal area that could be addressed with the use of key modulation. Adam suggested that the influx of energy that a key modulation provided could be used as a way to socially stimulate the client and encourage social connection. He elaborated on this by saying

I find that when that modulation can lift, it can really draw people into the current moment. So, in the context of the Alzheimer's and Dementia patients I work with, a song that stays in this key centre for a good amount of time may really enliven someone's spirit and bring them into the room by moving the key up.

The use of key modulation in clinical improvisation was mentioned by all three of the participants. Key modulation as a tool within improvisational experiences served as a way to encourage social connection between the client and therapist. David shared some of the clinical goals saying "I mean in clinical goals and objectives cause I mean, I can think of like the Bruscia techniques that you would use in improvisation, how you're supporting and sharing and guiding."

Table 5

Theme 4: Supporting Emotional Experiences

| Theme | Sample Quotes |
|---|--|
| Key modulation to support emotional experiences | <p>"And perhaps I feel that a key modulation might help introduce a new area, a new feeling for the person to enter into with those particular emotions or that particular feeling." (Denise)</p> <p>"If I'm playing Somewhere Over the Rainbow and I modulate from C to Eb by playing a Bb dominant chord for one bar, I think clients open up and have more space for emotional release when there's modulation happening." (Adam)</p> |

“Let’s say you’re playing Happy Birthday for somebody...and they say ‘I don’t like my birthday,’ you could change it to minor, maybe you use the modulation in some way to acknowledge how they feel about something.” (David)

Theme 4: Supporting Emotional Experiences

Supporting emotional experiences emerged as a main theme of the research during the coding process through examples given by the participants. There are no subthemes for this main theme due to the limited number of participants per code.

It was shown that key modulation was used to support emotional experiences through validating the feelings expressed by clients in music therapy sessions. Noting that people may emotionally experience birthdays differently, the example of modulating the song “Happy Birthday” from a major key to a minor key was mentioned by two of the participants. Adam sang “Happy Birthday accompanied by guitar in the major key and modulated to the minor key. David suggested “Let’s say you’re playing Happy Birthday for somebody...and they say “I don’t like my birthday”, you could change it to minor, maybe you use the modulation in some way to acknowledge how they feel about something.”

The participants also explained that key modulation could be used as a way to support emotional release in receptive music therapy experiences. Key modulation as a way to support the emotional release was mentioned by each of the participants. Adam provided the following example saying,

If I’m playing Somewhere Over the Rainbow and I modulate from C to Eb by playing a Bb dominant chord for one bar, I think clients open up and have more space for emotional release when there’s modulation happening

Key modulation was talked about as a way to support various emotional experiences including using key modulation to support the emotional experience of facilitating self-expression. David suggested that with movement of the key modulation “You could facilitate self-expression by using the modulation in a compositional way.

You know to move in a direction you know maybe, actually facilitating some expression.” Using key modulation to support the client in emotional expression was mentioned by each of the participants in the interviews. Adam believed that “emotional goal areas can really be served by modulation because uh in my experience, moving a key centre may illicit different emotions.” The arousal of different emotions through the use of key modulation served as a way to encourage emotional expression. The participants also noted the use of key modulation to support the client by introducing new emotional experiences and perspectives. Denise noted that “perhaps I feel that a key modulation might help introduce a new area, a new feeling for the person to enter into with those particular emotions or that particular feeling.” The potential of key modulation to arouse emotions was noted by each of the research participants. Adam said that “Even though it’s the same melody and the same musical content, I find that moving it around...can arouse some emotional movement.”

Table 6

Theme 5: Therapist’s Musical Path

| Sub Theme | Sample Quotes |
|---------------------------------|--|
| Learning to use key modulation | <p>“I think I would add that most of what I understand and know about modulation, I learned outside of the music therapy classroom.” (Adam)</p> |
| | <p>“Something I learned when I studied Composition is the median modulations. Let’s say you from I mean I guess down a third would be very obvious when you’re going from like C to A minor. But even if you go from C to A major there’s still a lot of notes in common.” (David)</p> |
| Using key modulation clinically | <p>“So, I am aware that unless it’s something that I’m purposefully doing in a certain intervention that that is you know meant to have a lot of it, I use it um as sort of a like special intervention at times. So that that it is something that doesn’t get saturated with a client and then it really has weight.” (Denise)</p> |

Theme 5: Therapist's Musical Path

The therapists' musical path emerged as a main theme of the research during the coding process as participants shared information on how key modulation figured into their own path towards becoming a music therapist. We will explore the following two subthemes: Learning to use key modulation and using key modulation clinically.

Therapists' Musical Path: Learning to Use Key Modulation

Each of the music therapists was asked during the interview how and if key modulation was addressed during their musical training. During the coding process, their responses to this question and other examples showed that part of each of the therapists' musical path was learning how to use key modulation. All three of the music therapists spoke of learning to use key modulation in their musical training prior to entering the field of music therapy. David and Adam both mentioned their jazz training being integral to their understanding of key modulation. Denise credited her musical training, specifically on the piano. Adam clarified that "I think I would add that most of what I understand and know about modulation, I learned outside of the music therapy classroom."

Each of the three participants had difficulty recalling the discussion of key modulation during their music therapy training. The reasons given for this varied from participant to participant with Adam crediting prior musical training stating "I don't remember to what extent that we covered that topic because by that time...I was already very familiar with that topic". David suggested that the difficulty recalling key modulation in relation to musical training was connected to the structure of music therapy programs saying "I mean we learned so much about, about thinking in a music therapy context and you know being able to make a session plan and discuss goals and objectives."

Two of the participants noted a tendency to modulate upwards rather than downwards. The impact of musical training was mentioned in regards to the direction of the key modulation by one of the participants. Adam cited his jazz training saying, "So, I think because I learned every thing I know about modulation from jazz education contexts, I don't go downward."

Preferences for certain methods of modulation were mentioned in relation to parts of the music therapist's musical training. The circle of fifths was mentioned by David as he explained that he would use the circle of fifths as a method of modulating when using a different key for each person.

Adam mentioned his preferred method of modulating saying "I almost always set up a key modulation with the dominant chord that sets up the next key. If I had to pick on one method, my desert island modulation is the dominant chord." The desert island modulation of using the dominant chord to modulate to the new was the method used in the two figures found previously in this chapter.

The intervallic distance between the keys used in the key modulation was also influenced by musical training shown through preferences for modulating for certain intervals. Median modulations were mentioned by both Adam and David with David sharing that modulating by thirds for major or minor key modulation as:

Something I learned when I studied Composition is the median modulations. Let's say you from I mean I guess down a third would be very obvious when you're going from like C to A minor. But even if you go from C to A major there's still a lot of notes in common.

Each of the music therapists interviewed had a different musical path to the field of music therapy and experiences with key modulation prior to entering the field. Transitioning the knowledge of using key modulation outside of the field to using key modulation clinically was remarked upon by Denise. Denise described the evolution of her perspective and knowledge on key modulation in a clinical setting in this quote: "Let's say initially I was relying on my technique from other piano or music training and then certainly now I would say it would be based off my experience of doing that within a session."

Therapists' Musical Path: Using Key Modulation Clinically

Using key modulation clinically was a subtheme under the therapists' musical path through examples showing that their musical path had an influence upon their clinical use of key modulation. For Denise the level of structure in the improvisation was a factor in determining whether a key modulation would be used. Denise said that "If it's improvisational and a little less structured I likely wouldn't be using modulation; it

wouldn't have the impact because there's no sort of set map or set statement." Each of the participants had different considerations when using key modulation clinically. Vocal register was a practical consideration and Adam shared that "Some of them are just very practical considerations like will this continue to work in, in my vocal register or, or other person's register.". Keeping in mind whether or not the key modulation will continue to work in the vocal register of the client and therapist serves as a practical guideline for the inclusion of a key modulation. Clinical considerations involving the use of key modulations included the importance of intentional use. Denise not only stated her belief in the importance of using key modulation with intention and purpose but also the importance of ensuring that key modulation was not overused.

So, I am aware that unless it's something that I'm purposefully doing in a certain intervention that that is you know meant to have a lot of it, I use it um as sort of a like special intervention at times. So that that it is something that doesn't get saturated with a client and then it really has weight.

Conclusion

In conclusion, the subthemes found through the coding analysis were divided into five main themes: key modulation as a source of change, to enhance the aesthetic experience, encourage connection, support emotional experiences and the usage of key modulation as a reflection of the therapist's musical path. The final chapter of the thesis begins with an interpretation of the results including links to the literature review. This is followed by potential implications of the research and closing with suggestions for further research.

Chapter 5: Discussion

In this final chapter, the five themes that emerged from the data analysis process are further explored drawing links between the findings and current literature on the topic. This is followed by the limitations of the research. Implications of this research for music therapy education, clinical practice and future research conclude the discussion chapter. The research questions are restated here to demonstrate to the reader of how they guided this inquiry. The primary research questions was: “How do music therapists in Canada use key modulation in their clinical practice?”. The subsidiary questions were: “What are the music therapy contexts in which key modulation is used?,” “What are the music therapy goals addressed and/or supported by the use of key modulation?,” “What are the music therapy experiences in which key modulation is used ?”. Music therapists in Canada use key modulation within various clinical contexts including individual and group settings. Music therapy goals addressed or supported through the use of key modulation included enhancing connection to movement, facilitating social cohesion, and supporting emotional expression. Types of music therapy experiences in which key modulation included re-creative movement experiences (e.g. “Oh When the Saints go Marching in”), compositional experiences, receptive relaxation experiences, as well as improvisational musical storytelling experiences. In the first chapter of this thesis it was mentioned that musical examples would be referred to throughout this thesis as a way to add context and understanding. For each of the themes, a song with a title or lyrics is listed to serve as a tie in to the corresponding theme. Each of these songs have at least one key modulation.

A Source of Change: “Some Things Never Change” (Lopez & Lopez, 2019)

The song “Some Things Never Change” (Lopez & Lopez, 2019) from the movie Frozen 2 (Buck & Lee, 2019) was chosen as a tie in to the corresponding theme for its reflection of change, awareness of change and that it relates to the “right” amount of change. The words of the song constantly state that *some things never change* while the visuals of the movie and the overall message seem to point to the opposite. Whether or not we recognize and name the source of change, as in this particular song, there is still an awareness that things are changing. Clients’ awareness of change via key modulation was something that was touched on by each of the music therapists. In their interviews,

they recalled various clients' responses demonstrating awareness, whether this was through a shift in body language or through a more conspicuous response such as changing instruments. Koelsch et al., (2002) found that non-musicians were able to recognize key modulation although unable to name it as key modulation. Clients' awareness of key modulation indicates that it can be used as a tool to support goals in various music therapy experiences. The awareness of key modulation symbolizing an awareness that things are changing could support various goals in music therapy including acceptance of change and noticing their own responses to change in their lives. Key modulation was used as a way to reflect change in music therapy experiences by the participants. It was used to reflect a change in person during a music therapy experience, to reflect a change in the story or in the mood. Using a key modulation to reflect a change to a different person was used as a way to bring attention to the individual. The participant suggested that each individual having their own key made it more of a special experience. In a music therapy experience, this could be used as a way to develop social awareness, to foster self-awareness, and to encourage self-expression. In compositional experiences, Baker (2015) mentioned the use of altered chords to reflect a change or shift in experience. Although Baker (2015) did not specifically mention it, key modulation, similarly to altered chords, could be used as a tool to reflect change in compositional experiences. This was suggested by David, who described his use of key modulation to reflect a change in compositional experiences. In improvisational experiences, key modulation was a way to reflect a change when doing a story telling experience. This is relevant because using the key modulation to reflect a change in the experience can enhance the client's experience. Music therapists use improvised story telling for a variety of reasons including self-expression, encouraging creativity and social goals (McClure, 2016).

The right amount of change is something that was identified by participants as an important clinical consideration. The idea of there being a "right" amount of change was supported by the potential for not only positive responses and reactions from clients but also for negative ones. Since we, as humans, have positive and negative responses to change, it serves to reason that these responses can be reflected in how clients respond to musical change such as a key modulation. This is supported by music therapy

improvisation literature that lists key modulation as a redirection technique (Bruscia, 1987). As a redirection technique, key modulation may be used to try and break patterns of rigidity with the introduction of a new key. The “right” amount of change may be enough to add something different to the music therapy experience. The “wrong” amount of change could result in the key modulation not having any impact or potentially having an adverse impact. Too much change for a client could evoke negative responses to the key modulation emphasizing how important it is to be aware of the potential consequences to using key modulation (Lee and Houde, 2011). For example, the use of numerous successive key modulations may destabilize the client, which may in turn negatively impact their ability to participate.

Enhancing the Aesthetic Experience: Lucy in the Sky with Diamonds (The Beatles, 1967)

The use of key modulation to add interest, complexity and authenticity were ways that the participants would enhance the aesthetic experience of participants. Regarding adding interest and complexity, music-centred approaches like Nordoff Robbins and Aesthetic music therapy discuss the importance of the music itself. Nordoff Robbins specifically “emphasizes the “art” of music as therapy” (Nordoff et al., 2014, p. 10) and the importance of clinical intention in each of the musical elements that are used. This is reflected in the use of key modulation to add and maintain musical complexity. The importance of the musical aesthetic in clinical improvisation is also discussed by Pavlicevic and Brown (1996). Two of the participants highlighted their music-centred approach to music therapy clinical practice.

Music therapists often use the preferred music of their clients, which often falls within the popular music idiom. Given the prevalence of key modulation in popular music (Ricci, 2017), re-creating these songs while maintaining original key changes might be an important way to enhance the authenticity of the experience. One example provided by David was “I Walk the Line” (Cash, 1956), where the key modulations are essential to maintaining the authenticity of the original song. Some clients will notice when a song is not played in its original key, or whether the key modulations found in a song are omitted (as mentioned by research participant David). Whether or not to re-create the key modulations then becomes an important clinical decision. For songs such

as “I Walk the Line” by Johnny Cash (1956) and “Lucy in the Sky With Diamonds” (The Beatles, 1967), the key modulation is integral to the song structure itself rather than being included in the final chorus for the sake of a key modulation (J. Hennessy, personal communication, June 5, 2020).

David mentioned the addition of a key modulation that was not a part of the original song. He mentioned that the clinical reasons for doing this would have to be examined but could be a way to enhance the aesthetic experience. This would be an additional example of a way to add musical interest and enhance the aesthetic experience. Presenting a new dimension to an already familiar song in the form of a key modulation could enhance the aesthetic experience of the client. A potential rationale for doing this could include assessing the client’s response to hearing a melody or song that is familiar to them with the variation of the key change.

Encourage connection: “I Wanna Dance with Somebody” (Houston, 1987)

There are many different ways of encouraging social connection and connection with the mind and movement. However, dancing with other people encompasses not only increased connection with movement but increased social connection with others. This reason was the rationale for choosing “I Wanna Dance With Somebody” (Houston, 1987) as the corresponding song for this section.

Key modulation as a way to encourage increased connection to movement was mentioned by all three of the participants. There was little found in the literature regarding the use of key modulation to address movement goals. However, the participants discussed using key modulation for the broader purpose of increasing movement in an experience as well as more specific goals. This code could have belonged in more than one category since movement is also a form of self-expression. However, it was placed in this category because the increased connection to movement was related to physical movement goals rather than self-expression goals by the research participants. It is important to note that other factors like an increase in tempo may have worked alongside the key modulation to inspire movement. In the “Oh, When the Saints go Marching in” example, the two key modulations were paired with an increase in tempo. The combination of the key modulation and the increase in tempo as a technique to encourage connection could be the subject of further research. This might be of

particular interest to Neurologic Music Therapy researchers who are interested in the use of rhythm to meet physical goals in music therapy (Thaut & Hömberg Volker, 2014).

Specifically, one of the participants shared that she used key modulation as a way to decrease anxiety and pace breathing in a receptive music therapy experience focused on relaxation. Grocke and Wigram (2007) mention the importance of predictability in these experiences. Given the discussion of key modulation as a source of change, using key modulation with the goal of decreasing anxiety and pacing breathing may sound counterintuitive. However, the introduction of a different musical element with musical support in a way that still feels predictable and natural to the client is how this was used in the receptive music therapy experience described by Denise. While the particular method of key modulation or intervallic relation between the two keys were not included by the participant, research from Radchenko et al. (2018) and Korsakova-Kreyn and Dowling (2014) show that they are varied responses to key modulation depending on the intervallic distance. Modulations to the dominant and subdominant are perceived as smoother, which is further supported by the Circle of Fifths as a means of modulating. Interestingly, the Circle of Fifths was also used by one of the participants to note turn-taking during a music therapy experience. Thus, the familiarity of the modulation method combined with the intervallic relation between the two keys (resulting in key or numerous notes remaining the same while modulating) may have been factors in still including predictability in these two clinical examples.

The receptive experiences that were shared by participants highlighted the use of live music and neglected to mention the use of recorded music. In receptive music therapy experiences, the Bonny Method of Guided Imagery and Music specifically mentions the importance of knowing the musical elements that are found within specific pieces (Bruscia, 2015). This suggests another avenue for future research as western classical music (which often includes key modulation) is predominantly used in the core programs in the Bonny Method of Guided Imagery and Music. This research may also be pertinent to other guided imagery and music practices that use western classical music.

Key modulation encouraging connection was also discussed in terms of social goals. Adam mentioned that in the case of music therapy client with dementia, the use of key modulation to bring someone into the room creates a space for the therapist and

client to connect. Encouraging connection with the task at hand may also remind the client of the goals and the therapeutic space. The use of key modulation as a redirection tool to bring the client's attention back to the task at hand is also mentioned by Bruscia (1987).

Support Emotional Experiences: "Africa" (Toto, 1982)

Key modulation was cited as a tool that could be used to support emotional experiences. This supports what was discussed in the Chapter Two literature review in the music theory, music perception and music therapy sections. The participants noted that they used key modulation facilitate emotional validation, encourage emotional expression, support emotional release, and stimulate emotional arousal.

Validating clients' feelings in music therapy is important in developing and maintaining the therapeutic relationship (Hilliard & Justice, 2011). The emotional validation through the musical elements signifies that key modulation can be used to validate changes in emotion. Modulating from major to minor keys (or vice versa) is a way to demonstrate and validate shifts in emotion in various songs as well. Examples of songs that modulate keys between the verse and chorus to signify a narrative shift include "Paparazzi" (Lady Gaga, 2008), "Lovefool" (The Cardigans, 1996) and the chosen song for this category "Africa" (Toto, 1982). "Africa" (Toto, 1982) modulates from B major to F sharp minor in between the verses and chorus and was chosen because of its smooth transition to a new key and the emotion that the song has inspired in many. The use of these examples and other songs with modulation between the verse and chorus could be used to validate, represent, and recognize changes in emotion.

In relation to improvisational experiences, the purposeful inclusion of key modulation could be used to explore what this change experience was like for the client and the emotions that this may have brought up. Furthermore, their experience of the key modulation (to the change) could be used as a way to validate how they emotionally respond to change outside of the therapeutic space.

David and Adam used the example of modulating Happy Birthday from major to minor to validate the emotions of clients. Additionally, in the example of Happy Birthday, the key modulation was used to help the client process their emotions and affirm that their feelings about a topic or song are valid. David mentioned that it also may

help alter the way that they relate to their birthday and the larger concepts involving this such as aging.

Korasova-Kreyn et al (2014) suggested key modulation as a tool for expression with their work in the field of music perception. Carroll and Lefebvre (2013) also make a link between key modulation and expression in *Clinical improvisation techniques in music therapy: A guide for students, clinicians and educators*. They mentioned that encouraging emotional expression with the use of key modulation afforded the opportunity for different and new emotional experiences (Carroll & Lefebvre, 2013). The introduction of a new key within the same musical experience could add an additional layer. For example, when modulating upwards, Denise mentioned “a feeling of being raised up” or soaring may be experienced by the client, which may in turn impact their musical expression.

The use of key modulation as a way to arouse emotions was mentioned by one of the participants. Key modulation is discussed as way to stimulate emotions on the podcast Switched on Pop with the use of the cathartic modulation (Sloan & Harding, 2016). In returning to the song used as the heading for this section, the song “Africa” (Toto, 1982) arouses strong emotions for a lot of people possibly including nostalgia. Whether used within a re-creative music therapy experience or other music therapy experiences, key modulations could be used to arouse emotions.

Therapist’s Musical Path: “Bohemian Rhapsody” (Queen, 1975)

“Bohemian Rhapsody” (Queen, 1975) is a song with multiple key modulations as well as touching on multiple musical genres and was therefore chosen as the heading for this section. The variety of musical experiences that music therapists have before entering the field serve as a reflection of their musical path and an influence for their work. Each of the three participants entered the field of music therapy after earning other musical degrees (composition, jazz, bachelor of music) and credited this as where they learned to use key modulation. Canada offers music therapy training at the Bachelor’s level (Acadia University, 2020; Canadian Mennonite University, 2020; Capilano University, 2020; Wilfrid Laurier University, 2020) but music therapists are increasingly entering the field at the Graduate level (Acadia University, 2020; Concordia University, 2020; University of Toronto, 2020; Wilfrid Laurier University, 2020). The prior musical degrees of each of

the participants were likely a factor in why they each learned to use key modulation prior to their music therapy training.

Each of the music therapists expressed difficulty in recalling key modulation being addressed during their music therapy training. One of the possible reasons suggested by one of the research participants for this was the combination of the breadth of topics that need to be covered and the short timeline of Canadian music therapy programs (Acadia University, 2020, Canadian Association of Music Therapists, 2016; Canadian Mennonite University, 2020; Capilano University, 2020; Concordia University, 2020; University of Toronto, 2020; Wilfrid Laurier University, 2020). Another possibility is that, as the theme Therapists' Musical Path showed, the participants' previous musical experiences influenced their way of viewing/ developing their own clinical musicianship. For many, this notion continued to evolve through music therapy professional work.

Participants mentioned having not only clinical considerations surrounding the use of key modulation but of having practical considerations as well. One of the important clinical considerations was the intentional and purposeful use of key modulation. This is in line with music therapy approaches that place importance on the specific musical elements that are used in music therapy. Lee et al. (2013) highlights the importance of being aware of the impact of the musical elements that are used in clinical improvisations along with Bruscia (2015) in GIM. The practical considerations included considering vocal range and the instruments used by the therapist and client(s). Denise suggested that they would generally only include a key modulation if the client was using non-melodic instruments. These practical considerations may seem obvious and unnecessary to note, but practical considerations like these were a determining factor in whether key modulation was used. The participants were asked what instruments were most commonly used in their clinical practice as well as their primary instruments. Guitar was the primary instrument of David and Adam while Denise's primary instrument was piano. Musical training may have played a role in their comfort level using key modulation more on their primary instrument.

Musical training was mentioned by each of the music therapists as something that influenced their use of key modulation whether through the method or intervals used in the key modulation. Other musical experiences such as listening to popular music genres

and participation in musical groups had increased frequency of key modulation by certain intervals or methods. The use of modulation by a semi-tone was noted by the participants and is also noted by musicologists in popular music for its frequency (Doll, 2011; Ricci, 2017; Griffiths, 2014; Sloan et al, 2016; 2020). Vocal warmups in choirs also typically use a repeated phrase modulated by a semitone for each repetition. The combination of musical training and key modulation found in music that the participants were familiar with may have played a part in influencing how music therapists used key modulation. These factors in turn show how the way key modulation is used is a reflection and expression of the therapists' clinical musicianship.

Something that was not addressed by any of the participants was how key modulation was and could be addressed in the context of music therapy assessment. One of the participants mentioned that due to the context of their music therapy practice (hospital setting), that often the assessment, treatment plan and termination are encompassed by one session. Key modulation could be used in the context of music therapy to assess awareness and tolerance of musical change. Specifically, modulating the key to better suit the client's vocal range was mentioned by two of the participants and could be a way to assess the vocal range of a client.

Limitations

This research used a modified ground theory methodology and a total of three interviews were conducted and analyzed to stay within the time constraints of a Master's thesis. This meant that the data did not reach saturation and that the findings are context bound and may contain elements of transferability. Readers are advised to remember that the specific geographic location of the participants, their primary instruments, music therapy approaches and the populations they worked with are all contextual elements that should be consider when appraising the transferability of the findings. In Canada, there are music therapists practicing with various populations, from small towns, to large cities and from the West coast to the East coast. Given that only three music therapists were interviewed for this research, it was not possible to represent the hodgepodge of perspectives across the country. The primary instruments cited by the three research participants were guitar for two of the participants and piano for one of the participants. People who entered the music therapy profession with different primary instruments such

as voice or clarinet may have different perspectives on the use of key modulation in music therapy clinical practice. Two of the participants highlighted the music-centred nature of their approach to their music therapy clinical work. Music therapists with different approaches to their clinical work may have different perspectives to offer. Additionally, developmental considerations relating to key modulation were not addressed by the participants.

This was the first research study carried out by the principal investigator. As a novice researcher, there were follow up questions during the interviews that I wish I had thought to ask but the later significance of these unsaid/unthought questions were unclear.

The COVID-19 pandemic was a possible limitation of the conducted research. Two of the interviews were conducted during the COVID-19 pandemic. The pandemic has been a collective trauma experienced by people worldwide and may have had an impact on the responses of the participants. It is unclear how this may have impacted the responses of research participants but it was a possible limitation of the research.

Implications for Education

Implications for education include increased awareness of key modulation warranting its place in the education and training of music therapists. This research demonstrated awareness of key modulation regardless of musical training and a potential to address various goals in music therapy. Music therapy training programs are likely addressing key modulation in their training programs but this study reiterates the importance of doing so.

Specifically, there are implications for different types of music therapy experiences. The participants included key modulations in re-creative music therapy experiences for the purpose of authenticity and adding musical interest. A potential implication for education is to have this inform the creation of musical resources and songbooks. Composition with music therapy clients is discussed in many music therapy training programs. Key modulation can be used as an additional tool for music therapists to use during these experiences to reflect the emotions or stories that their clients wish to share.

Implications for Music Therapy Clinical Practice

Implications for music therapy clinical practice include the development of specific interventions that include the use of key modulation, specific goals that key modulation can be used to help address and the importance of using key modulation purposefully. Specific movement interventions that music therapists could include in their clinical practice were shared by research participants. Experiences included by music therapists were encouraging directional movement with the use of key modulation, inspiring movement with the song “When the Saints Go Marching in” and validating emotion by modulating from major to minor with the song “Happy Birthday”. These experiences could be incorporated and adjusted based on the contexts that music therapists are working in.

Some of the specific goals that the participants suggested could be addressed and supported by the use of key modulation were in the social, emotional, musical and movement domains. As suggested by the participants, key modulation could be used in clinical practice to support the goals of emotional release, arousal, validation and to encourage self-expression. An additional implication for music therapy practice is the importance of using key modulation with intention. The potential for positive as well as negative responses to the change presented by key modulation is an important implication for music therapists aiming to increase their use of key modulation in their clinical practice. An important consideration would be how your client typically responds to change that occurs in their day to day life or in the music therapy space. Considering the variety of responses that people have to things changing, responses to key modulation should be monitored carefully. Key modulation may not be indicated or may even be contraindicated.

Implications for Music Therapy Research

It is also hoped that this exploratory study will inspire further inquiry into the topic of key modulation. This section provides different topics that would warrant further investigation and suggestions for methods of investigation. The modified grounded theory approach utilized in this research was chosen to not only generate more information on the phenomenon but for the practical purpose of staying within the timeline of a Master’s thesis. As mentioned previously in the limitations, this meant that

saturation was not reached for this study. Further research could include a larger survey study to try and hear the perspectives of a higher number of music therapists in Canada. The research conducted was delimited to include the perspectives of Canadian music therapists. Further research could examine the use of key modulation by music therapists residing in countries outside of Canada. The topic of change has repeatedly come up when discussing the use of key modulation in music therapy clinical practice. Research linking the use of change in therapy contexts is well documented in verbal-based counselling therapy. Future research could explore the impact of various types of musical change in therapy, including the rationale, indications and contraindications to using diverse types of musical changes.

“Looks Like We Made it” (Manilow, 1973)

Over the last five chapters of this thesis, literature from the fields of music theory, perception and music therapy have been discussed in their addressing of key modulation. The results showed that key modulation was used in a variety of ways as a source of change, to enhance the aesthetic experience, to encourage connection and to support emotional experiences. The results also suggested that the music therapists’ musical path and background played a role in their clinical use of key modulation.

In the first chapter of this thesis it was mentioned that musical pieces would be included to aid your understanding and I would like to conclude this thesis with that in mind. Even though it “Looks Like We Made It” (Manilow, 1973) was chosen to end this research thesis, it does not mean that the remaining questions on key modulation cease to exist. Even in the face of the adversity brought forth by the COVID-19 pandemic, the research participants expressed curiosity and a desire to learn more about the topic. When discussing a movement intervention with the song “When the Saints go Marching in” Adam shared:

I really wish I had had the opportunity to test out my theory and what if we had just kept it in C and don’t modulate. Is there the same amount of movement? I don’t know for sure.

These are the words that I would like to leave you with as it encourages us to continue to ask important questions and to use the research process to contribute knowledge to enhance our music therapy practices

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Appendix A: Certificate of Ethical Acceptability



CERTIFICATION OF ETHICAL ACCEPTABILITY FOR RESEARCH INVOLVING HUMAN SUBJECTS

Name of Applicant: Stephanie Maxwell
Department: Faculty of Fine Arts \ Creative Arts Therapies
Agency: N/A
Title of Project: The Clinical Use of Key Modulation by Music
Therapists in Canada: A Modified Grounded Theory
Study
Certification Number: 30012047

Valid From: October 24, 2019 To: October 23, 2020

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

A handwritten signature in black ink that reads "Richard DeMont".

Dr. Richard DeMont, Chair, University Human Research Ethics Committee

Appendix B: Email Call for Participants

Dear music therapy colleague,

This is an invitation to participate in a research study being conducted by Stephanie Maxwell under the supervision of Annabelle Brault at Concordia University. This research study is being done in partial fulfillment of the requirement for the Master's program at Concordia University and has received ethics approval from Concordia's University Human Research Ethics Committee (protocol # 30012047).

This study will examine Canadian music therapists' perspectives on the clinical use of key modulation in music therapy.

The researcher is seeking to interview individuals who have a minimum of 2 years of professional clinical experience and who have used key modulation in their music therapy work. The interviews will be conducted in English.

The purpose of this qualitative study is to obtain more information on how music therapists in Canada use key modulation in their clinical practice.

If you choose to participate and informed consent is received, an interview will be scheduled at a time that is convenient for both the researcher and the participant. This interview will take no longer than one hour, will be conducted in person, via Skype, or by telephone; and will be audio recorded. Participation in this research study is voluntary and confidential.

If interested in participating in this study, please contact Stephanie Maxwell at stephaniekath.maxwell@gmail.com. Participation will be limited to the first three participants who contact the researcher, meet the criteria for inclusion, and complete the research (i.e., who do not withdraw from the study). If you have any questions, please do not hesitate to contact the faculty supervisor or myself.

Kind regards,

Stephanie Maxwell, MTA
Principal Investigator
Concordia University
519-588-2767
stephaniekath.maxwell@gmail.com

Annabelle Brault, MA, MTA
Faculty Supervisor Concordia University Department of Creative Arts Therapies
1395 René Lévesque Blvd. West
Montreal, Quebec, Canada, H3G 1M8
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Appendix C: Certificate of Ethical Acceptability (Amendment)



CERTIFICATION OF ETHICAL ACCEPTABILITY FOR RESEARCH INVOLVING HUMAN SUBJECTS

Name of Applicant: Stephanie Maxwell
Department: Faculty of Fine Arts \ Creative Arts Therapies
Agency: N/A
Title of Project: The Clinical Use of Key Modulation by Music
Therapists in Canada: A Modified Grounded Theory
Study
Certification Number: 30012047
Valid From: May 04, 2020 To: May 03, 2021

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

A handwritten signature in black ink that reads "Richard DeMont".

Dr. Richard DeMont, Chair, University Human Research Ethics Committee

Appendix D: Informed Consent Form

INFORMATION AND CONSENT FORM

Study Title: The Clinical Use of Key Modulation by Music Therapists in Canada: A Modified Grounded Theory Study (Protocol # 30012047)

Researcher: Stephanie Maxwell, MTA

Researcher's Contact Information:

Phone: 5195882767

Email: stephaniekath.maxwell@gmail.com

Faculty Supervisor: Annabelle Brault

Faculty Supervisor's Contact Information:

Office: VA-260

**Visual Arts Building,
2495 René Lévesque W.**

Phone: 514-848-2424 ext. 4679

Email: annabelle.brault@concordia.ca

Source of funding for the study: None

You are being invited to participate in the research study mentioned above. This form provides information about what participating in this study would mean. Please read it carefully before deciding if you want to participate or not. If there is anything you do not understand, or if you want more information, please feel free to contact the principal investigator or the faculty supervisor.

A. PURPOSE

The purpose of the research is to examine the use of key modulation in music therapists' clinical practice in Canada.

B. PROCEDURES

If you participate, you will be asked to participate in a semi-structured interview. A semi-structured interview questionnaire will be sent before the interview. The interview will be audio-recorded.

In total, participating in this study will take 30-60 minutes.

C. RISKS AND BENEFITS

There are no foreseeable risks in participating in this research.

Potential benefits include increased awareness of your personal use of key modulation in music therapy work, which may positively impact your own music therapy practice.

D. CONFIDENTIALITY

We will gather verbal information (the audio recording of the interview) regarding your experiences and use of key modulation in music therapy practice as part of this research.

The interview will be audio recorded. Please indicate below whether or not you agree to the recording of your interview.

I agree to the audio-recording of the interview _____

I prefer that the interview not be audio-recorded _____

We will not allow anyone to access the information, except people directly involved in conducting the research. We will only use the information for the purposes of the research described in this form.

The information gathered will be confidential. That means that only the research team will know your identity, but that it will not be possible to make a link between you and the information you provided in the results that will be shared with the public.

We will protect the information by storing the information on a password protected laptop and hard drive, as well as a password protected word document containing the interview transcript.

We intend to publish the results of the research. However, it will not be possible to identify you in the published results.

We will destroy the data five years after the end of the study.

E. CONDITIONS OF PARTICIPATION

You do not have to participate in this research. It is purely your decision. If you do participate, you can stop at any time. You can also ask that the information you provided not be used, and your choice will be respected. If you decide that you do not want us to use your information, you can tell the researcher up to two weeks (14 days) after the interview. The researcher will destroy the data collected up to that point. After that point, it will not be possible to withdraw your data. There are no negative consequences for not participating, stopping in the middle, or asking us not to use your information.

F. PARTICIPANT'S DECLARATION

I have read and understood this form. I have had the chance to ask questions and any questions have been answered. I agree to participate in this research under the conditions described.

NAME (please print) _____

SIGNATURE _____

DATE _____

If you have questions about the scientific or scholarly aspects of this research, please contact the principal investigator. Their contact information is on page I. You may also contact their faculty supervisor whose information is also provided on page I.

If you have concerns about ethical issues in this research, please contact the Manager,
Research Ethics, Concordia University, 514.848.2424 ex. 7481 or
oor.ethics@concordia.ca.

Appendix E: Interview Guide

1. What is your level of education (Please include any prior or subsequent non-music therapy trainings if applicable)?
2. How many years of experience do you have as a music therapist?
3. Please describe the client population(s) that you have and are working with as a music therapist.
4. What instruments do you most frequently use in your music therapy practice?
5. How frequently would you say you use key modulation within the contexts of re-creative, Improvisation, compositional or receptive music therapy experiences?
6. For what purpose(s) to you usually use key modulation within clinical context?
7. What clinical goals and objectives do you think can be supported by the use of key modulation, if any?
8. When using key modulation in your clinical practice, what responses, if any, do you notice in your clients? Are there any examples that stand out that you can share?
9. In your music therapy training, was key modulation discussed? How did you learn to use key modulation clinically?
10. Is there anything that you would like to add regarding key modulation in music therapy clinical practice?