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Research-based Music Composition for Anxiety Reduction

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by

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Abstract

The following undergraduate honors thesis utilizes the Therapeutic Function of Music (TFM) Plan worksheet conceived by Dr. Deanna Hanson-Abromeit as a template to guide research and analysis for how the musical elements should be structured to support the goal of anxiety reduction for college-aged students. Anxiety is a mental health concern that is prevalent among college students due to the variety of social, environmental, and academic stressors that affect their day-to-day lives. The TFM was established to provide transparency and a common language within the field of music therapy and beyond when discussion the elements of music. Research was conducted in the form of an extensive literature review to complete the TFM worksheet. Using the results from the literature review, the author composed an original piece of music for flute, piano, and cello. The piece was recorded using a Presonus Audio Box iTwo and an M7 Condenser microphone. The song was edited using the Presonus Studio One 3 software. The author and two students from Western Michigan University's School of Music played the instrumental parts, and a student in his second year of the Multimedia Arts Technology program recorded and edited the piece. The results of this creative honors thesis provide a framework for creating music that will aid in the goal of anxiety reduction.

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Introduction

Anxiety is a mental health concern that affects all ages, with the mean age of affected young people as low as 15 years old (WHO, 2000). The Anxiety and Depression Association of America reports that anxiety is the most common mental health concern in the United States. Of those affected, 18.1% of the population that is above 18 years old are affected by anxiety disorders and less than half of those individuals actually receive any treatment (ADAA, 2018).

Anxiety disorders are occurring in younger clients at staggering rates. The Diagnostic and Statistical Manual of Mental Disorders (DSM-V) describes 14 separate diagnoses under the umbrella of Anxiety Disorders including, but not limited to, (a) generalized anxiety disorder, (b) panic disorder, (c) specific phobias, (d) social anxiety disorder, (e) posttraumatic stress disorder, (f) psychotic disorders, (g) selective mutism, and (h) personality disorders (See Appendix A for definition of terms and Appendix B for common anxiety measures). Anxiety disorders can affect a person's physical, cognitive, social, emotional, and occupational health. The worry and fear that comes from an anxiety disorder is often irrational and unprecedented, often making the individual feel as if they cannot look for help (ADAA, 2018).

Prevalence and Impact of Anxiety and Anxiety Disorders for College Students

In a study conducted by Stewart-Brown et al. (2000) college students from three different institutions participated in a survey that asked questions about their emotional well-being. The survey was conducted through a self-reported questionnaire, and results showed that the mean score of general health, energy, mental health, and social function were all significantly lower for those of higher education students than that of the general

population between the ages of 18 to 34 years. In this study, the emotional health of the students was one of the greater concerns of the researchers, as the numbers (higher education students scored lower than the general population in all 8 categories of health status that were evaluated in the study) were shockingly low, which affected the students' studies, work, social life, and other activities. The results of the study show that the mean score for students' energy and vitality was 53.00 as compared to the general population at 61.62. Similarly, the mean mental health score for the students was 65.57 as compared to the general population at 72.89. Almost half of the students (49%) stated that they "didn't do as much as they would like" due to low emotional health, as compared to 21% of the general population with the same response. The results of the study illustrate that college students' emotional health is more problematic for them than their physical health. Between 1/3 and 2/3 of the respondents claimed anxiety affected their studies and between 25% and 50% reported anxiety about finances. Results also showed that from the 1970s and onward, there is a rise in long-standing physical and mental illness in individuals between the ages of 18-34 years of age.

Depression is a disorder that is often comorbid with anxiety disorders. A study by Aselton (2012) identified a variety of sources of stress for American college students who have been diagnosed with depression. The stressors included roommate issues, academic problems, financial/career concerns, and pressure from family members. In 2017, the American College Health Association (ACHA) conducted a National College Health Assessment with a group of about 1,500 undergraduate college students. Results reported that 57.4% of the students felt overwhelmed by all they had to do in the last two weeks and 55.6% felt exhausted, though not from physical activity (ACHA, 2017). Of the

students assessed, 68.1% of the students reported feeling "very sad" some time in the previous year and 61.4% felt overwhelming anxiety (ACHA, 2017). Feelings of depression impaired the students' ability to function in 40.1% of those same respondents (ACHA, 2017). In this assessment, 21.6% of the students were clinically diagnosed or treated for anxiety and 11.1% for panic attacks (ACHA, 2017). Despite these staggering numbers, only 17.9% were treated for or diagnosed with depression (ACHA, 2017). In regards to co-morbidity, 14.4% of those students reported for both anxiety and depression (ACHA, 2017).

Adolescents (10-19 years of age) also show great interest in music and revere it as an important part of their day-to-day lives (Saarikallio & Erkkilä, 2007). They play music in their room, while doing chores, cooking meals, doing homework, working out, for entertainment purposes, and even to fall asleep easier. Young people are some of the top consumers of music. A 2007 study by Saarikallio and Erkkilä studied participants ranging from 8 to 85 years of age to determine how adolescents use music in daily life. The outcomes of this study identified that music helps adolescents understand their thoughts and comprehend and process their emotions. Music has been found as a useful tool in helping young people regulate their mood(s) (Saarikallio & Erkkilä, 2007). In 2013, Schäfer et al. concluded the top three reasons for listening to music were: self-awareness, social relatedness, and arousal and mood regulation.

Music is also used as a distraction technique in hospital settings and has proven to reduce pain/anxiety/stress, with the music intervention significantly reducing anxiety for 50% of the patients tested (Nilsson, 2008). Music therapy has been used in individual and group settings throughout the 20th and 21st centuries to alter mood states and induce more

desirable moods as well as induce physiological changes in the client(s) (Davis, 2003; Heiderscheit & Madson, 2015; Dileo &Bradt, 2009; Berger & Schneck, 2003) (See Appendix C for mood induction and relaxation techniques used in music therapy).

Therapeutic Function of Music Plan Worksheet

In 2015, Dr. Deanna Hanson-Abromeit developed a worksheet to guide music therapists and students in determining and evaluating the therapeutic function of musical elements related to a specific goal to make music therapy interventions stronger. The worksheet has four essential areas: (a) defining the musical elements in non-musical terms, (b) establishing a theoretical framework by examining existing research, (c) describing the purpose of that musical element to address the identified goal within an intervention, and (d) the description of each musical element for intervention development (Hanson-Abromeit, 2015). The "theoretical framework" column is for the researcher to describe why that specific musical element will help the client in reaching their goal. In the "purpose of the musical element" column the researcher lays out what the musical element will be able to do to help the client reach his/her goal. In other words, it further explains the use of the element regarding the theoretical framework. The "description of the musical element" column identifies exactly how that musical element must "look like" in the intervention for the goal to be met.

Purpose and Rationale

The purpose of this creative honors thesis was to research how each individual musical element (e.g., melody, tempo, rhythm, meter, timbre) should be structured to decrease an individual's anxiety to be closer to homeostasis using Dr. Deanna Hanson-Abromeit's worksheet published in *A Conceptual Methodology to Define the Therapeutic*

Function of Music (2015). Using that established framework, the author composed a song based on the research with the purpose of reducing college-aged students' anxiety. The song was recorded as the final product of the established research.

Goal of Music: To reduce anxiety in college-aged students

Musical Element	Theoretical Framework	Purpose of Musical Element	Description of Musical Element
Melody: The horizontal arrangement of multiple sounds over time (combination of pitches and rhythm), that has a contour, or general shape, and is often easily remembered (Merriam-Webster, 2018).	As stated in The Handbook of Music and Emotion, a narrow melodic range (centered around C5) may be associated with "expressions like sad, dignified, sentimental, tranquil, delicate, and triumphant" (Gabrielsson & Lindström, 2010, p. 390; Tan et. al, 2012). The range of the melody may extend roughly an octave above or below C5. Clear tonality implies more stability than the intervallic structure of tritones or minor seconds. Perfect 4^{ths}, 5^{ths}, unisons, and octaves are associated with pleasantness (Gabrielsson & Lindström, 2010, p. 389-390). Music listeners in the US and the Western world are used for melodies that have an arch-shape, that start on a pitch and predominantly lead to a climax at a higher pitch, and then return to the starting note or notes. (Huron, 2006, p 93). A study conducted by Tan et. al (2012) concluded that melodic contour includes ascending and descending lines, and that relaxing music should have moderate melodic complexity with the listener being able to recall about 65% of the melody (Tan et. al, 2012). Melodic material should repeat throughout the piece without unexpected rests in phrases (Hooper, 2012).	Pleasant sounding intervals (e.g., perfect 4ths, 5ths, octaves) induce feelings of relaxation in the client. The song may begin with controlled tension in the melodic line (delaying the use of C - tonic) and then ease into more pleasant-sounding melodic progressions to match the listener's tension and then ease it over the duration of the listening experience. The melody should be easily understood by the listener to help induce a clear state of mind, and easy to recall by the listener to provide positive reinforcement.	The melody will have a clear tonality that includes 4ths, 5ths, octaves, and unison intervallic movements. The piece will consist of primarily stepwise motion with melodic repetition.

Pitch: Frequencies of sound waves that can be high or low. A single perceived sound in a collection of sounds (Merriam-Webster, 2018).	Smaller pitch intervals (stepwise motion) are generally expected in most forms of music (Huron, 2006, p. 91-92). Huron defines *pitch proximity* (p. 93) as listeners expectation for subsequent pitches to be close to the previous pitch, indicating that the pitches should have step-wise motion to increase predictability. Predictable music leads to positive responses (reward, appraisal, pleasantness) from the listener (Huron, 2006 ,140-141). The optimal pitch range is centered around C5 in a major mode through a statistical analysis of 30 music selections for relaxation proposed by Board Certified music therapists (Tan et. al, 2012).	The music should remain fairly predictable, with primarily step-wise motion and limited use of skips in the pitches that create the melodic line to support the relaxation response. The central pitch (C5) should appear frequently to provide consistency and build expectation.	Pitches should be in C major with C5 being the tonic pitch of the melody. Pitch intervals should remain rather small for *most* of the piece (P4 and smaller), with primarily step-wise motion.
Harmony: The combination of two or more pitches, sounding simultaneously across all sound sources (timbres) at any given moment in music (Merriam-Webster, 2018).	Similar to melody, consonant and simple harmony can be related to emotions like relaxed, dignified, and graceful (Gabrielsson & Lindström, 2010, p. 390). Harmony was defined as one of the primary musical elements listeners focused on when clinically instructed to focus on one particular part of the music. Additionally, frequent chord changes activate the amygdala (fear response center of the brain) and defeat the purpose of emotion regulation (Sena-Moore, 2013). The harmonic complexity of relaxing music should remain within the diatonic key with a clear tonal center (Tan et. al, 2012).	Certain intervals or chords should be avoided (ex: tritone, augmented 6ths) as well as minor, dissonant, and unexpected harmonies to avoid escalating the listener's tension. The harmony should create an overall pleasant mood for the listener to help soothe and calm them. Chord changes will be limited in frequency and within the key to decrease activation of the amygdala. The major mode will elicit feelings of pleasure and relaxation.	The harmony should have a limited number of tension-building chords, and can include different chords (e.g., I/i, IV/iv, V(7), vi/VI) with some variance. The harmony should also be consonant and simple, staying within the diatonic key.
Tempo: "the rate of speed of a musical piece" (Merriam-Webster, 2018).	Tempo has a large impact on the listener. The tempo should be 60-80 beats per minutes (Nilsson, 2008; as cited by Tan et. al, 2012) to help induce a state of relaxation and help the listener to regulate their emotions. Music that is too fast can	Unpredictability leads to uneasiness and surprise, which does not provide a sense of comfort for the anxious listener. Use of a tempo between 60-80 beats per minutes will help the listener to regulate their emotions,	Tempo will be set between 60-80 beats per minute. There may be slight variations in tempo (accelerando/ritardando). These variations can be determined by the use of the iso-principle

	overwhelm the listener and their body may rhythmically entrain to that tempo, causing unwanted physiological changes. Slight tempo variations may occur to create interest and regain attention (Hooper, 2012). In live music, the tempo may be altered to match the individual's internal tempo at the start (physiological signs: heart rate, breathing rate), allow for physiological entrainment, and then the tempo may decrease to manipulate the individual's internal tempo and slow their breathing/heart rate (Heiderscheit, 2015). This is how the iso-principle can be used.	and may allow them to physiologically entrain to the tempo of the music.	in live music, but a recording can also start faster and gradually slow down with the same goal in mind.
Dynamics: The volume (loudness/softness) of musical sound that varies throughout a piece of music.	Dynamics are an expressive element of music. Adolescents have identified that in times of distress, they benefit from loud musical experiences that envelope their entire focus and absorb them in the sound (Saarikallio & Erkkilä, 2007). However, when trying to induce a state of relaxation, the maximum volume should not exceed 60 dB (Nilsson, 2008). Dynamics in relaxing music vary slightly (between *pp* and *p* or *mf* and *f*) (Tan et. al, 2012).	Changes in dynamics create interest in music. If the dynamics remain stagnate throughout the intervention, the listener may lose focus, resulting in increased anxiety. Although rarely exceeding 60 dB, there should be some variations in the dynamics to maintain the listener's attention and create intrigue.	Dynamics will vary slightly between *pp* and *p* or *mf* and *f*, to not exceed 60 dB.
Rhythm: A multifaceted dimension of music that includes the duration of sound over time. The steady pulse or heartbeat of a musical work, similar to the ticking of a clock (Merriam-Webster, 2018).	Rhythm has a strong effect on the listener as it serves as a timing cue (Mainka & Mallien, 2014). The listener can physiologically entrain with the rhythm of the music (heartbeat, respiration rate) (Thaut & Rice, 2014). Smoother rhythms (less accented beats) can be perceived as dignified, happy, or peaceful, graceful, and serene (Gabrielsson & Lindström, 2010, p. 391). The rhythm should be clear and memorable with less rhythmic complexity than melodic complexity (Tan et. al, 2012).	Having a clear and memorable rhythm provides stability, predictability, and comfort for the listener. A steady rhythmic structure allows for the possibility of physiological entrainment and allows the client's heart rate and/or respiration rate to slow, which are common goals related to the symptoms of anxiety/panic attacks (ADAA, 2018).	The rhythmic structure will be steady and predictable with low rhythmic complexity.

Timbre: The "distinguishing quality" of a voice or sound that makes it different from the next (Nichol, 2012).	Research has stated that music with less sharp timbres has been proven to induce relaxation (Niet, et al., 2009). Examples of instruments with sharp timbres may include are: oboe, electric guitar, trumpet (Disley, Howard, & Hunt, 2006). Recorded instrumental music has also been shown to reduce anxiety (Tan et. al, 2012). Certain instruments have been favorable for relaxation music include: piano, string instruments, flute, (Tan et. al, 2012) marimba, ocean drum (Matney, 2017). The study done by Tan et. al (2012) also identified the use of instrumental music over nature sounds was effective to induce relaxation.	Using timbres with appropriate harmonics will help to induce relaxation for the listener. The timbres should be layered smoothly and grab the listener's attention without overwhelming them. Adding too many different timbres could over-stimulate the listener and work against the desired goal. The timbres used should be strictly instrumental, and include the use of string instruments. Possible instrumental arrangements include but are not limited to: piano/cello/flute, piano/strings, or marimba/flute.	This piece will be for piano, flute, and cello. The piece may also be recorded over nature sounds (ex: waves, bird calls).
Meter: The organization of music and music beat, typically a recognizable and recurring pattern of emphases on certain pulses that can establish familiarity (Merriam-Webster, 2018).	Results from various studies show that humans prefer simple metrical patterns (duple or triple meter) (Brochard et. al, 2003; Essens, 1986). Essens (1986) found a hierarchal preference for meters that contain integer ratios and those perceived akin to a clock. Brochard et. al (2003) strengthened the comparison of meter to a clock, identifying the mechanisms (dependability and consistency that create expectancy) that cause the physiological reactions of foot-tapping or entraining to a beat. Examples of meters that fit this criterion are 2/2, 4/4, 6/8, 3/4, or 3/8. Syncopation upsets the expectation that is previously set within the meter being used in a piece of music (Fernández-Sotos, 2016).	Simple duple or triple meters allow the listener to entrain to a clearly established pattern of accented pulses. These metrical patterns allow the listener to build expectation and create predictability in the music. There are exceptions to this, like the commonly used compound time signature, 6/8.	Possible metrical patterns are 2/2, 4/4, 6/8, 3/4, or 3/8. Syncopation will not be used regularly.
Form: The general shape of the music denoted by labeled sections that may or may not repeat	Simple forms (defined by low melodic, harmonic, and rhythmic complexity) are associated with relaxation, joy, or peace (Gabrielsson &	The form must not be too complex to avoid overwhelming the listener. If there are too many musical ideas, the	The form should be relatively simple, ABA or AABA.

throughout the work (Merriam-Webster, 2018).	Lindström, 2010, p.391). Hooper's (2012) study regarding Predictable Factors in Sedative Music (PFSM) tool in 2012. This tool outlines musical form for sedative music using: verse/chorus alternation, binary, ABA, AABA, or theme and variations.	listener may be over-stimulated and contraindicated for the desired outcome. The form should allow the listener to feel comfortabl/stable. A repetitive form supports the need for repetitive melodic material.	
Lyrics: Words or utterances that can be spoken or sung along with or without music. Typically associated with melody, harmony, and pitch/contour.	De Niet et. al (2009) established that recorded instrumental music could reduce anxiety. A statistical analysis conducted by Tan et. al (2012) confirmed that most music for relaxation does not contain lyrics or vocalizations.	Lyrics will not be used in the music to avoid over-stimulating or overwhelming the listener.	Lyrics will not be used in the intervention as it is contraindicated for the stated goal.
Style: The variety of categories in music (ex: country, rock, pop, acoustic, metal, rap, etc.). Defined by similarities across pieces like content, instrumentation and technique (Merriam-Webster, 2018).	No specific genre/style has been identified as having a higher therapeutic capability, but what is most important is the "slow and flowing music" (Nilsson, 2008). This can be operationally defined as *legato* music, meaning "smooth and connected" (Merriam-Webster, 2018). In this style of music the melody moves from note to note without emphasis on the change between notes. This style has been seen as having the most positive effect of inducing relaxation.	The style of the music should create a flowing feeling or thought in the listener. This will allow for the listener to exit an anxious state by redirecting his/her attention.	The music should be *legato* style with little emphasis between notes in the melody,

Theory-Based Synthesis of Music Elements for Anxiety Reduction

To summarize the final column in the chart above, music intended to reduce anxiety will be most effective with the following structure: clear tonality in the key of C major, containing primarily stepwise motion while including 4ths, 5ths, and unison octaves. The melodic line will contain repetitive material, with C5 being the central pitch of the melody, extending about an octave above or below. The harmony will remain within the diatonic key, with emphasis on I, IV, V chords in the octave(s) below the melody. The tempo will be between 60-80 beats per minute with slight variations in reference to the iso-principle. A steady and predictable rhythm in the meter of 2/2, 4/4, 6/8, 3/4, or 3/8 with a form or either ABA or AABA will be used with *legato* style phrases. Small dynamic changes not exceeding 60 dB will be observed. The instruments used should have gentle or mild timbres, like piano, flute, and/or string instruments. The piece may incorporate nature sounds (e.g., waves, bird calls) but should be mastered with and without these sounds to serve greater clinical use by being more flexible with client preferences. The piece will not include lyrics (See Appendix D for notated music).

Discussion

The research process began in May of 2018. The first step was reading and becoming familiar with Dr. Hanson-Abromeit's Therapeutic Function of Music Plan worksheet. To fill the columns in the worksheet, supporting research was found by searching for peer-reviewed articles and research studies on GoogleScholar and the Western Michigan University Online Library. The worksheet was completed in September 2018, and then the songwriting process began.

After completing a comprehensive search, an established structure for the song was seen in the Theory-Based Synthesis of the Music section above. Within these guidelines, it was a simple process to generate song ideas. I am most comfortable with the piano, so I sat down and recorded myself playing a chord progression in C major. I played varying melodic phrases and ideas over the recording and made final decisions based on what fit the established guidelines. I wrote the piano and cello parts first, and then composed the flute part last. I talked with a cellist and flautist about pitch range limitations, and also had them approve that the parts were playable before recording.

The biggest problem with recording was coordinating schedules. I played piano, but needed assistance recording and also needed people for the cello and flute parts. Each part needed to be recorded independently and were layered on top of each other in the recording software. Initially the piano was recorded first without a click track, so the cellist was unable to stay in time with the recording. The cellist re-recorded with a click track to keep the tempo at 80 beats per minute, played through headphones. The flautist recorded by listening to the click track and the cello. The pianist recorded with just the instrumental parts, no click track. Each part took multiple recordings, and the final selections made were not perfect due to human limitations. A student in his second year of the MAT program at WMU edited the recording and a file was created with and without nature sounds. The sound files came from FreeSound, a collaborative database of free sound samples that can be used for various purposes.

Conclusion

The result of this honors thesis is an original song that was composed with the target goal of anxiety reduction upon listening. There are multiple versions, with and

without nature sounds. Another result is an established framework of musical elements for constructing music aimed towards the same goal. This framework may be used to structure music interventions or write other music with the same goal area in mind to strengthen the author's scope of practice.

References

American College Health Association. (2018). *National college health assessment II: Reference group undergraduates executive summary fall 2017* (pp. 1-19, Rep.). Hanover, MD: American College Health Association.

Anxiety and Depression Association of America. (2018). *Facts & Statistics.* Retrieved from https://adaa.org/

Anxiety and Depression Association of America. (2018). *Symptoms.* Retrieved from https://adaa.org/

Aselton, P. (2012). Sources of stress and coping in American college students who have been diagnosed with depression. *Journal of Child and Adolescent Psychiatric Nursing, 25*(3), 119-123. doi:10.1111/j.1744-6171.2012.00341.x

Berger, D. & Schneck, D. (2003). The use of music therapy as a clinical intervention for physiologic functional adaptation. *Journal of Scientific Exploration, 17*(4), 687-703.

Breeman, S., Cotton, S., Fielding, S., & Jones, G. (2015). Normative data for the Hospital Anxiety and Depression Scale. *Quality of Life Research Journal, 24*, 391-398.

Brochard, R., Abecasis, D., Potter, D., Ragot, R., & Drake, C. (2003). The "tick tock" of our internal clock: Direct brain evidence of subjective accents in isochronous sequences. *Psychological Science, 14*(4), 362-366.

Butler, G. (1993). Definitions of stress. *Occasional Paper (Royal College of General Practitioners)*, (61), 1–5.

Cosco, T.D., Doyle, F., Ward, M., & McGee, H. (2012). Latent structure of the Hospital Anxiety and Depression Scale: A 10-year systematic review. *Journal of Psychosomatic Research, 72*, 180-184.

Crusius, C. (2018). Refocus [Recorded by E. Shrivastava, C. Crusius, & M. Phelps]. [wav. file] Kalamazoo, MI.

Davis, W. (2003). Ira Maximilian Altshuler: Psychiatrist and pioneer music therapist. *Journal of Music Therapy, 40*(3), 247-263.

Dictionary by Merriam-Webster: America's most-trusted online dictionary. (2018). Retrieved from https://www.merriam-webster.com/

Dileo, C. & Bradt, J. (2009). Medical music therapy: Evidence-based principles and practices. In *International Handbook of Occupational Therapy Interventions* (445-452). Stockholm, Sweden: Springer.

Disley, A. C., Howard, D. M., & Hunt, A. D. (2006). Timbral description of musical instruments. *International Conference on Music Perception and Cognition*. Retrieved October 4, 2018, from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.615.7903&rep=rep1&type=pdf

Essens, P. (1986). Hierarchical organization of temporal patterns. *Perception & Psychophysics, 40*(2), 69-73.

Fernández-Sotos, A., Fernández-Caballero, A., & Latorre, J. M. (2016). Influence of tempo and rhythmic unit in musical emotion regulation. *Frontiers in Computational Neuroscience, 10*. doi:10.3389/fncom.2016.00080

FreeSound by Creative Commons. (2018). Retrieved from https://freesound.org/browse/

Gabrielsson, A., & Lindström, E. (2010). The role of structure in the musical expression of emotions. In *Handbook of Music and Emotion: Theory, Research, Applications* (pp. 367-400). Oxford University Press.

Gutiérrez, E. O., & Camarena, V. A. (2015). Music therapy in generalized anxiety disorder. *The Arts in Psychotherapy, 44*, 19-24. doi:10.1016/j.aip.2015.02.003

Hanson-Abromeit, D. (2015). A conceptual methodology to define the therapeutic function of music. *Music Therapy Perspectives, 33*(1), 25-38. doi:10.1093/mtp/miu061

Heiderscheit, A. & Madson, A. (2015).Use of the iso principle as a central method in mood management: A music psychotherapy clinical case study. *Music Therapy Perspectives, 33*(1), 45-52.

Helsing, M. (2012). *Everyday music listening: The importance of individual and situational factors for musical emotions and stress reduction* (Unpublished master's thesis). University of Gothenburg, Sweden. Retrieved July 8, 2018, from https://gupea.ub.gu.se/bitstream/2077/28257/4/gupea_2077_28257_4.pdf

Hooper, J. (2012). Predictable factors in sedative music (PFSM): A tool to identify sedative music for receptive music therapy. *Australian Journal of Music Therapy, 23*, 58-72.

Huron, D. (2006). Heuristic listening. In *Sweet anticipation: Music and the psychology of expectation* (pp. 91-100). Cambridge, MA: Massachusetts Institute of Technology.

Huron, D. (2006). Prediction effect. In *sweet anticipation: music and the psychology of expectation* (pp. 131-141). Cambridge, MA: Massachusetts Institute of Technology.

Huron, D. (2006). Statistical properties of music. In *Sweet anticipation: Music and the psychology of expectation* (pp. 73-90). Cambridge, MA: Massachusetts Institute of Technology.

Johnson, R. (1981). E. Thayer Gaston: Leader in scientific thought on music in therapy and education. *Journal of Research in Music Education, 29*(4), 279-286.

Julian, L. J. (2011). Measures of anxiety: State-Trait Anxiety Inventory (STAI), Beck Anxiety Inventory (BAI), and Hospital Anxiety and Depression Scale-Anxiety (HADS-A). *Arthritis Care & Research, 63*(S11), 1-11. doi:10.1002/acr.20561

Mainka, S. & Mallien, G. (2014). Rhythmic speech cuing. In *Handbook of neurologic music therapy* (pp. 150-160). Oxford, UK: Oxford University Press.

Matney, B. (2017). The effect of specific music instrumentation on anxiety reduction in university music students: A feasibility study. *The Arts in Psychotherapy, 54*, 47-55. doi:10.1016/j.aip.2017.02.006

Maier, W., Buller, R., Philipp, M., & Heuser, I. (1988). The Hamilton Anxiety Scale: reliability, validity, and sensitivity to change in anxiety and depressive disorders. *J Affect Discord, 14*(1), 61-68.

Moore, K. S. (2013). A systematic review on the neural effects of music on emotion regulation: Implications for music therapy practice. *Journal of Music Therapy, 50*(3), 198-242. doi:10.1093/jmt/50.3.198

Nichol, M. (n.d.). 50 musical terms used in nonmusical senses. Retrieved July 8, 2018, from https://www.dailywritingtips.com/50-musical-terms-used-in-nonmusical-senses/

Niet, G. D., Tiemens, B., Lendemeijer, B., & Hutschemaekers, G. (2009). Music-assisted relaxation to improve sleep quality: Meta-analysis. *Journal of Advanced Nursing, 65*(7), 1356-1364. doi:10.1111/j.1365-2648.2009.04982.x

Nilsson, U. (2008). The anxiety- and pain-reducing effects of music interventions: A systematic review. *AORN Journal, 87*(4), 780-807. doi:10.1016/j.aorn.2007.09.013

Norman, S.B., Cissell, S.H., Means-Christensen, A.J., & Stein, M.B. (2006). Development and validation of an overall anxiety severity and impairment scale (OASIS). *Depression and Anxiety, 23*, 245-249.

Seligman, M. E., Walker, E. F., & Rosenhan, D. L. (2007). *Abnormal psychology*. New York: Norton & Company.

Saarikallio, S., & Erkkilä, J. (2007). The role of music in adolescents mood regulation. *Psychology of Music, 35*(1), 88-109. doi:10.1177/0305735607068889

Schäfer, T., Sedlmeier, P., Städtler, C., & Huron, D. (2013). The psychological functions of music listening. *Frontiers in Psychology, 4(511), 1-9.* doi:10.3389/fpsyg.2013.00511

Stewart-Brown, S., Evans, J., Patterson, J., Petersen, S., Doll, H., Balding, J., & Regis, D. (2000). The health of students in institutes of higher education: An important and neglected public health problem? *Journal of Public Health, 22*(4), 492-499. doi:10.1093/pubmed/22.4.492

Tan, X., Yowler, C. J., Super, D. M., & Fratianne, R. B. (2012). The interplay of preference, familiarity and psychophysical properties in defining relaxation music. *Journal of Music Therapy, 49*(2), 150-179. doi:10.1093/jmt/49.2.150

Thaut, C. & Rice, R. (2014). Rhythmic auditory stimulation. In *Handbook of Neurologic Music Therapy* (pp. 94-105). Oxford, UK: Oxford University Press.

WHO International Consortium in Psychiatric Epidemiology. (2000). Cross-national comparisons of the prevalences and correlates of mental disorders. *Bulletin of the World Health Organization, 78*(4), 413-426. Retrieved August 30, 2018.

APPENDICES

APPENDIX A

Definitions of Mental Health Terms

Anxiety: In the DSM-V, there are a variety of anxiety disorders (ex: Generalized Anxiety Disorder, Panic Disorder, Social Anxiety Disorder) that all share similar qualities, such as excessive and uncontrollable fear and worry. Oftentimes, this fear or worry impacts the daily living of the individual and symptoms/sign are present more days than not.

Maladaptive Behavior: A behavior that impacts the quality of daily life for an individual. The individual's ability to meet their goals can be affected. It may be hard for the individual to maintain relationships and build successful lives. (Seligman, Walker, & Rosenhan, 2007).

Panic Attack: A panic attack is a physical manifestation of excess anxiety. Symptoms can include but are not limited to: accelerated heart rate, shaking of the limbs, shortness of breath, nausea, light-headedness, chest pain, detachment from reality, fear of losing control, or feelings of choking (Anxiety and Depression Association of America, 2018). Panic attacks are usually unexpected and leave the individual feeling frightened and worried about recurring attacks.

Stress: There are two types of stress, eustress and distress. Eustress is positive stress, while distress is negative stress. Stress can affect an individual physically, mentally, and emotionally. Someone who experiences distress can experience distractibility, overtiredness, irrationality, anxiety, anger, disorganization, substance abuse, or speech problems (Butler, 1993).

APPENDIX B

Common Clinical Measures of Anxiety

***Beck Anxiety Index (BAI)*:** This is an example of an inventory used to diagnose anxiety. It includes common symptoms of anxiety (ex: "Unable to relax" or "Shaky/unsteady") that the individual rates on a 4-point scale from "Not At All" to "Severely – it bothered me a lot". There is an interpretation guide to determine what the point values mean for the individual. Like the STAI, the BAI is a self-report index. A weakness of the BAI is that is does not take into account many of the cognitive side effects of anxiety (ex: excessive worry) (Julian, 2011).

***State-Trait Anxiety Index (STAI)*:** There are two different STAI forms, STAI-T (trait anxiety) and STAI-S (state), both used in clinical settings. The STAI-T test is used for individual self-report of those who are clinically diagnosed with anxiety. The STAI-S is used for individual self-report to get a sense of a person's perception of his/her anxiety in the moment. No diagnosis of anxiety is needed for the STAI-S. Each inventory is 20 items and is structured on a 4-point scale with the anchors of "Almost Never", "Sometimes", "Often", and "Almost Always". One weakness of the STAI is not differentiating between anxiety and depression (Julian, 2011).

***Hamilton Anxiety Rating Scale (HAM-A)*:** This scale measures anxiety symptoms on a scaled rating of 0 ("Not Present") to 4 ("Severe"). It is filled in by the clinician, and measures symptoms of both psychic and somatic anxiety. Scores range from 0 to 56 with the following categories: <17 = mild severity; 18-24 = mild to moderate severity; 25-30 = moderate to severe (Maier et. al, 1988).

***Overall Anxiety Severity and Impairment Scale (OASIS)*:** This questionnaire was developed to serve as a continuous measure of the severity of anxiety and impairments across multiple anxiety disorders. The scale is a 5-question self-report Likert scale-type questionnaire that may be used in both clinical and research settings (Norman et. al, 2006).

***Hospital Anxiety and Depression Scale (HADS)*:** This is an example of a self-report 4-point scale that assesses both anxiety and depression in non-psychiatric outpatients. There are two subscales, the HADS-A (anxiety) and HADS-D (depression) (Cosco et. al, 2012). There are 14 items on the scale, with each subscale having 7 items. Patient answers range from 0-4 and the total scores range from 0-21, with higher scores indicating higher severity of anxiety or depression (Breeman et. al, 2015).

APPENDIX C

Definitions of Music Therapy Terms

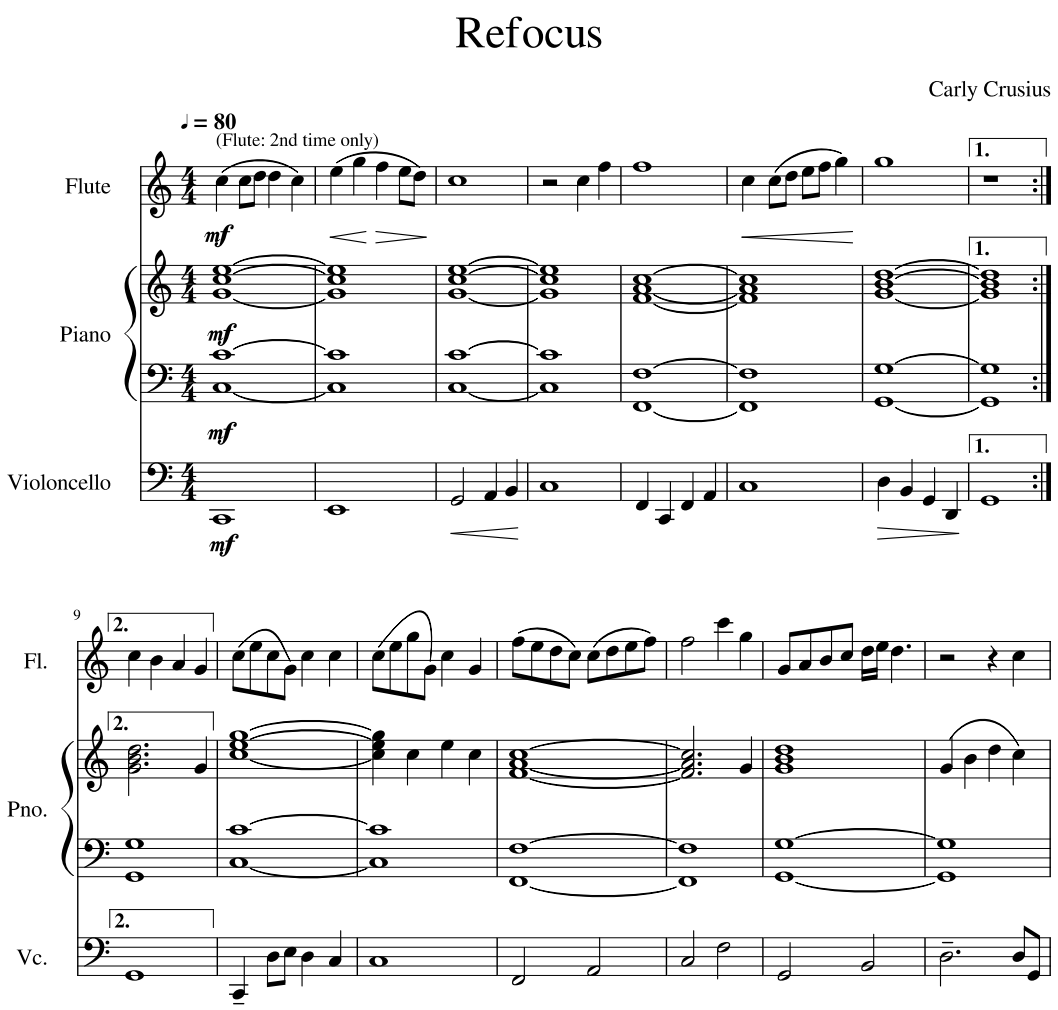
Iso-Principle: A technique that matches the present mood of the client (as observed by the music therapist or described by the client) with the music and then alters the musical elements to move the mood state of the client to something more desirable or appealing (,). Common technique used for mood induction.

Levels of Attack: A technique established by Ira Altshuler in the early-mid 20th century. Focused on the selection of music with the intent to "arouse, hold and redirect attention, alter mood, and elicit imagery and association" (Davis, 2003). Focused on the musical elements of rhythm, melody, harmony, mood-modifying music, and pictorial-associative music.

Progressive Muscle Relaxation: The alternation of tension and release in the musculature of a specific region of the body with the possible intention of cycling through the body to engage full body muscle relaxation. Paired with music that matches the tension and release of desired action.

Sedative Music: E. Thayer Gaston first described this type of music. This is music that has a relaxing effect on the listener due to the slower tempo, weaker emphasis on beats, and soothing dynamics (Johnson, 1981).

APPENDIX D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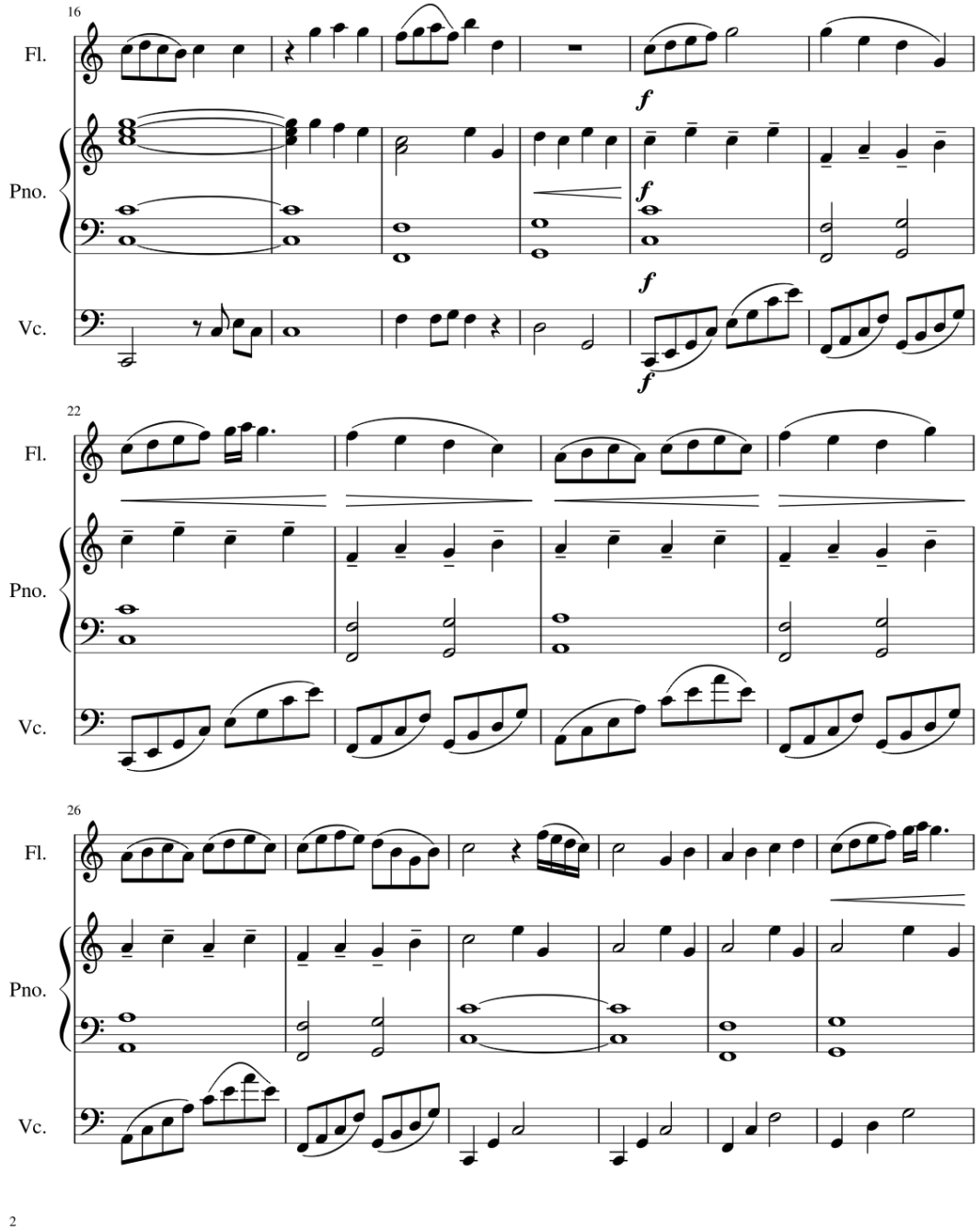

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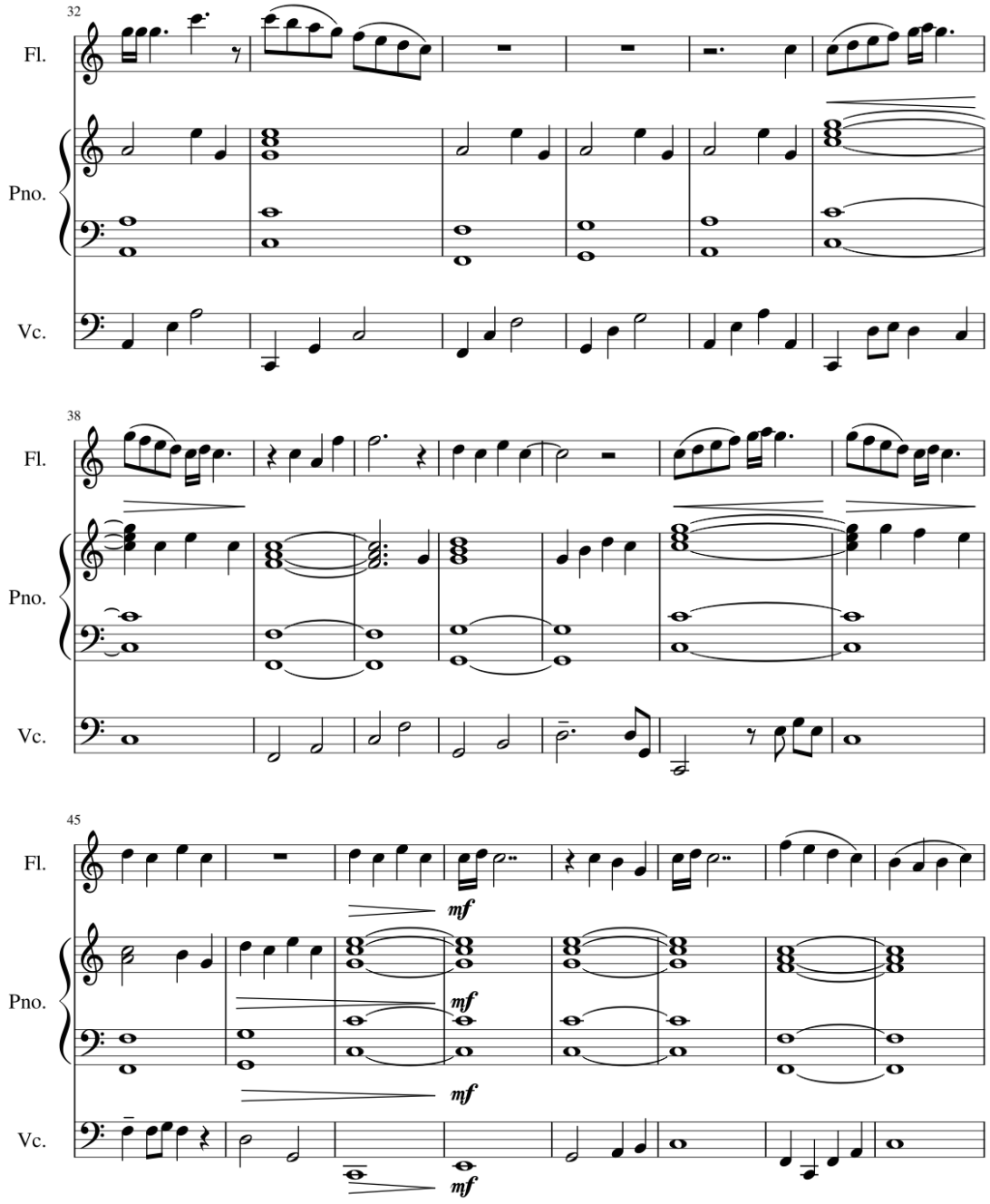
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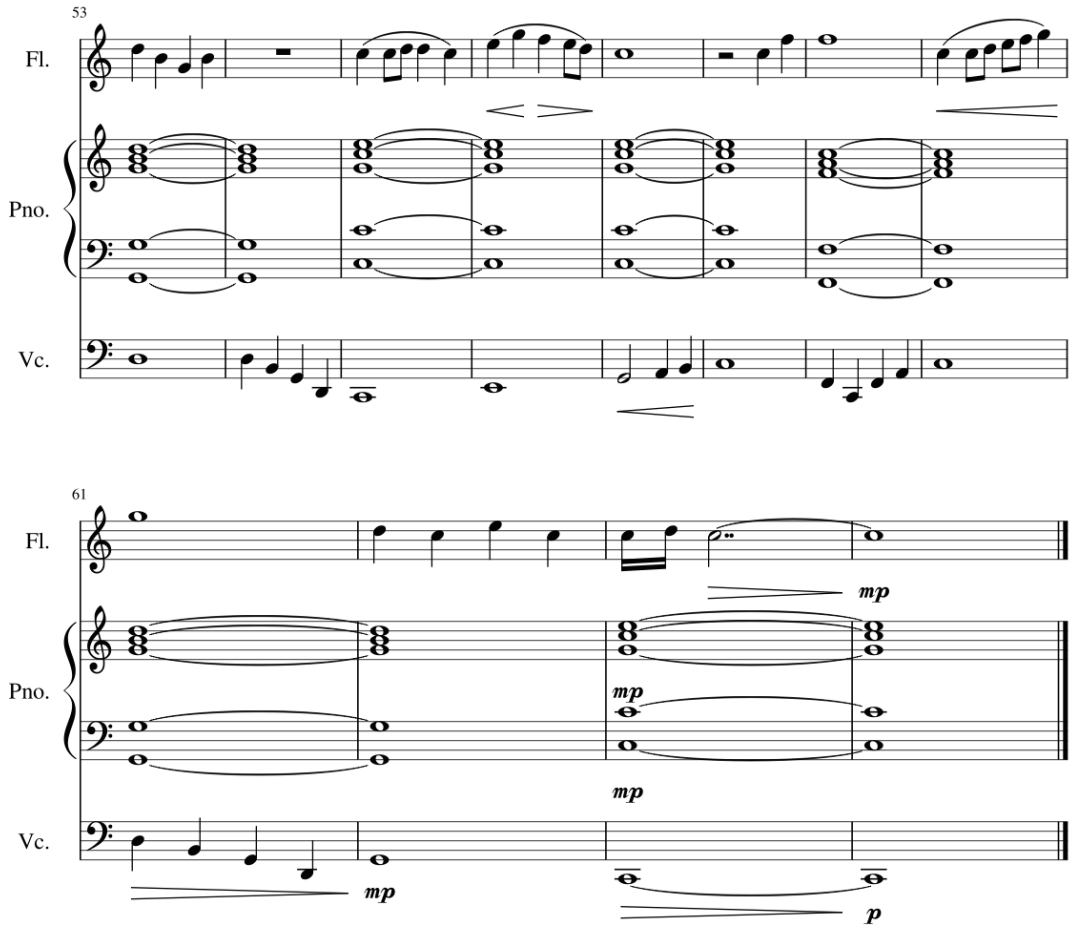
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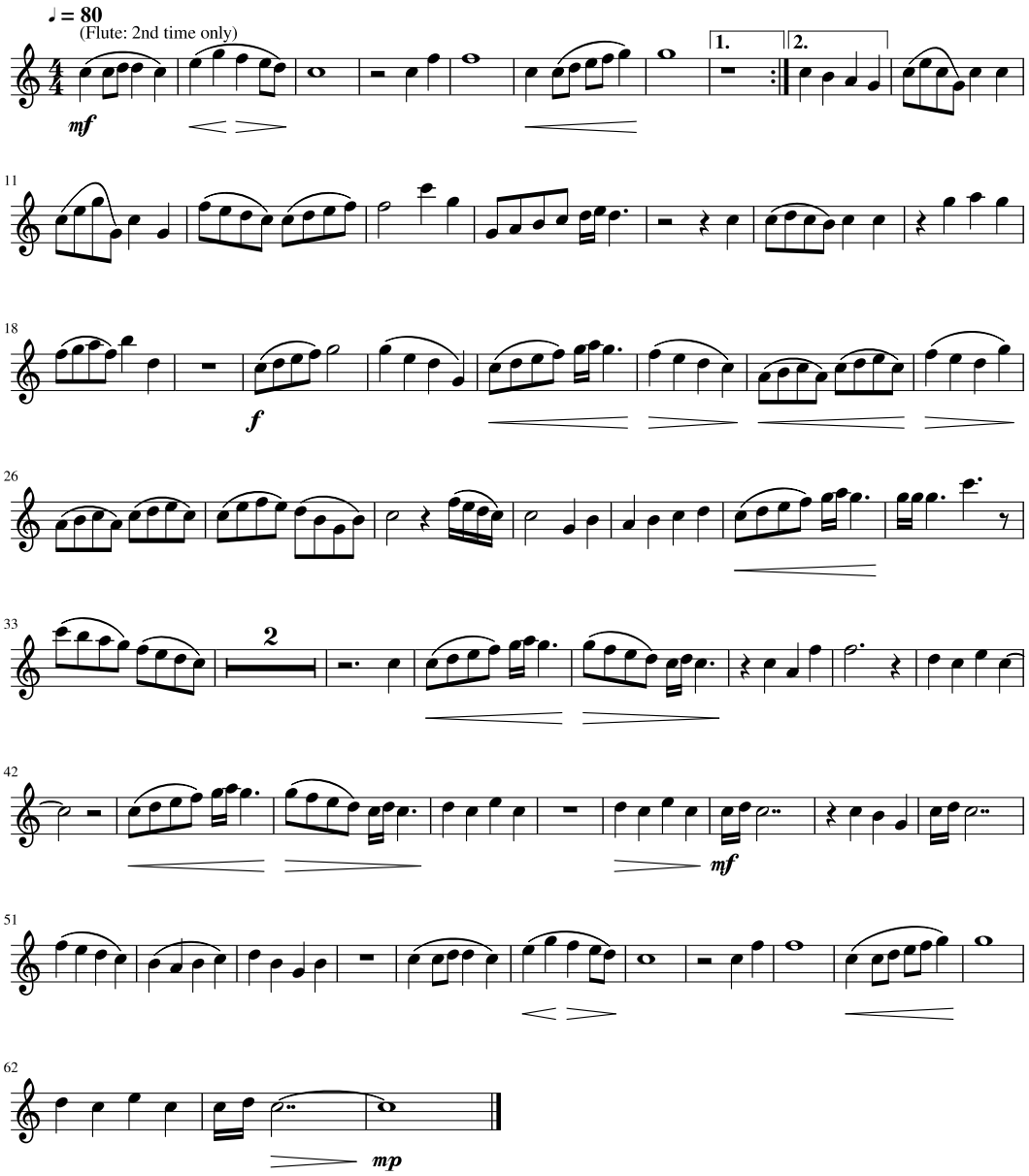

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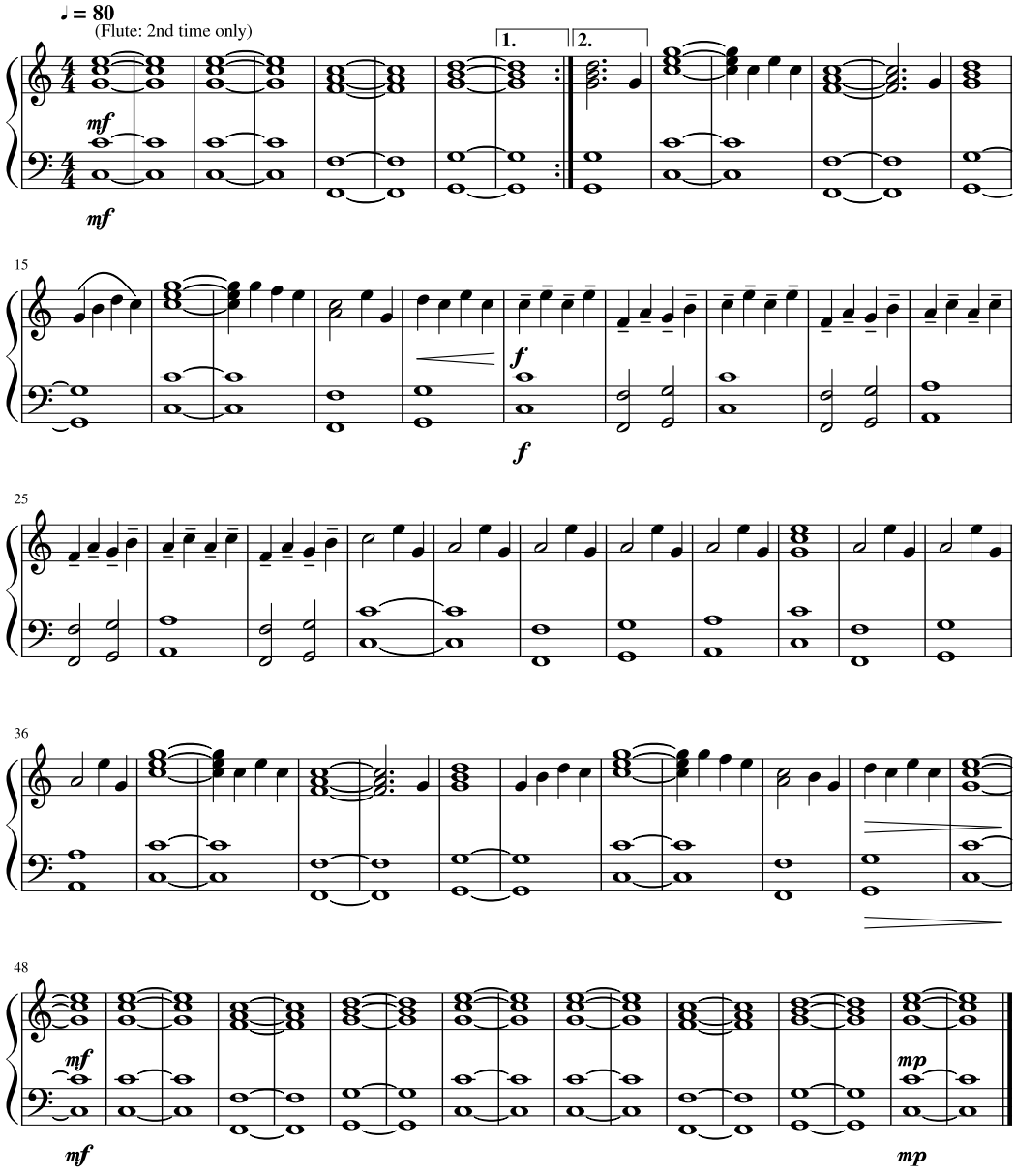

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