

Music of Well-Being

The Role of Different Musical Features in Mood Regulation and Depression Alleviation

Author:

Yuehao Gao

Institution:

University of California, Santa Barbara

Department and Course:

Department of Music

MUS 260A – Music Cognition

Instructor:

Dr. Janet Bourne

Abstract

This paper examines the secret of music therapy as an effective therapeutic method for alleviating depression, a mental health disorder that spans globally. Recognizing the existence of diversified musical preferences, personal past-life experiences, and cultural influences across different people, this paper aims to elicit a framework providing universal cues for everyone seeking self-curing from depression or professional therapeutics to choose the right music as the antidote. Specifically, this paper conducts a literature review on the potential effect of mood regulation of major musical features, as well as a detailed analysis based on two models correlating music, mood, and depression alleviation. The conclusion part exhausts detailed suggestions for people with different emotional management purposes and with different personal traits regarding music selection for their therapeutic purposes.

I. Introduction

In the past few years, depression has become a major mental health disorder that has swept across the globe. In the current year of 2023, while 17.8% of Americans report being currently diagnosed with depression, 29% report having been diagnosed with the symptom in their lifetime (Witters, 2023). Depression is also a prevalent mental health disorder across countries, especially since the year 2020, due to the COVID-19 global pandemic, depressive symptoms worldwide grew from 193 million people to 246 million, which is about 28% (Duszynski-Goodman & Henderson, 2023).

These are astounding numbers, meaning that nearly three out of ten people are currently undergoing or have undergone this painful mental disorder. Indeed, depression is a severe symptom that could not only hinder the acquisition of a positive mood or impede a person's ability to work, study, or socialize in the long term, but also reinforce negative mindsets and cognition, obstructing neurotransmitter activities in the nerve system, and in the worst case, some people tend to commit suicide (Du & Yu, 2011, Lamme, 2012). Hence, alleviating depression is a solid demand in the modern world. On a higher level, in the year 2011, the World Health Organization (WHO) indicated that mental well-being should not only refer to a state without any disease or disorders, but also, to a comprehensive healthy state combining physical, mental, and social aspects. Therefore, the quest for an effective method to alleviate depression goes beyond the fast relief from negative moods; rather, it is more important to cultivate a stronger resilience that extends to both mental fortitude as well as a healthy-functioning neurological system inside human bodies, which help us to form a harmonious society eventually. This perspective highlights the significance of a useful strategy that addresses the nature of depression and impacts individuals' overall health state at the same time.

Among various publicly-recognized therapeutic methods that alleviate depression, including but not limited to cognitive-behavioral therapy (CBT), interpersonal therapy (IPT), as well as Pharmacotherapy which antidepressant drugs are involved (Shinohara et al, 2013), music therapy stands out because of its great feasibility and high emotional values provided (Lamme, 2012, Aigen, 2020, Elst et al, 2021). This is especially true since modern technologies enable us to listen to specific pieces of music that we desire on various occasions with multiple devices possible, including our phones, MP3 players, or laptops. Essentially, it is widely believed that the experience

of music listening plays a key role in mood-regulating and depression alleviating. For instance, Rawden et al (2005) indicated that music listening boosts our feeling of “certainty”, which consequently triggers aesthetic pleasure and a sense of belonging and controllability. He replenished his argument in 2010 by stating that music listening stimulates self-confidence, strengthening, mood-regulating and emancipating, calm, and comfort, all of which contribute to the increase of happiness and self-identity, eventually alleviating the symptoms of depression. Similarly, Goethem (2011s) pointed out that music therapy is prevalent due to its nature of not requiring corresponding mental or physical activities, which means that music listening belongs to a relatively relaxing, healthy relieving method, compared to other activities like smoking. Another core benefit of music therapy is that involving a professional therapist is non-necessary, so in the aspect of “health musicology”, people have the flexibility to choose their music to treat themselves at any desired occasion (Stige, 2002).

A more important reason that music listening stands out among other therapeutic methods is that it cures depression fundamentally, and therefore in the longer term, meaning that relapsing is less likely to happen. From a scientific perspective, depression can be caused by three major aspects: current life stressors including work situations and loneliness, past life events including the death of a relative or friend or broken relationships, as well as constitutional reasons including biological and heredity disorders (Hansson et al, 2010). While it is widely believed that depression caused by the first two aspects is easier to be ameliorated by various therapeutic methods, people were doubting if music listening is effective for depression caused by neural system damage, as indicated by Harvard Medical School in 2022, neural transmitters are inhibited in the amygdala, thalamus, and hippocampus of the brains of those suffering from depression. However, back in the

year of 2012, Lamme brought up exciting news that music has been shown to reconstruct brain structures and re-enabling normal neural transmitter activities, therefore taking charge of our moods, implying that music is a solid source of self-therapy for alleviating depression and has the solid function of preventing relapse. Likewise, Elst et al (2021) have also brought up the conclusion that music engages us in much longer, uninterrupted pleasure cycles, which have a longer duration for positive mood offered to listeners, compared to other sources of “fast pleasurable” including food or sex. Therefore, it is indispensable to say that music listening provides us with a strong effect of depression alleviation, together with its own aesthetic values and how it ameliorates our mental well-being in the long run.

Albeit the publicly admitted benefit that music listening brings to depression alleviating, it is hotly debated how the positive and negative moods brought up by various kinds of music will affect the depression alleviation process. Specifically, aiming to self-cure under multiple categories of stressors, it remains unclear what musical features are universally constructive to elicit positive or negative mood, and how those moods compare with each other when it comes to ameliorating the depressive feeling itself and establishing a healthy mindset and physical neural system. On one hand, conventionally, most people tend to agree that a positive mood brought by “positive musical features” has a significantly better effect on depression ameliorating, while a negative mood brought by “negative musical features” has aversive effects. For instance, Saarikallio & Errkkila (2007) stated that pleasant musical experiences help people to forget unpleasant memories and therefore alleviate depressive feelings, while Yuan et al (2014) argued that negative moods intensify people’s vulnerability to negative-feeling events. However, on the other hand, there actually exists a large number of people who prefer listening to music that elicit negative moods

when feeling depressed, while scholars also admit the positive effect that sad music actually bring in the aspect of depression ameliorating. For instance, comparing to his previous study in 2007, Saarikallio and McFerran in the year of 2014 found that large numbers of young adults have reported that they actually “locked” themselves in sad music, and enjoyed the process of introspection of their past life events in order to be better afterward. This fact is also brought up by Taruffi & Koelsch (2014), that people tend to enjoy sad music after experiencing the death of a significant one or the breakup of a relationship. With all these being discovered, both positive and negative moods brought up by music listening seem to have their potential to either alleviate or intensify depression.

Instead of empirical discussions on what music brings positive emotions and what brings the opposite, it is worth coming up with a shared system of notion about which pieces of music people shall listen to, and which pieces shall people avoid instead during the state of depression or feeling down. In the world that makes sense for the public to talk, it will be beneficial to come up with a widely-accepted axiom regarding the connection between music and depression alleviation, specifically which aspects of music contribute to depression amelioration or prevention.

The following parts of this paper will come up with a literature review on how specific musical features, including rhythmic patterns, harmonic, melodies, and timbre, and musical structure contribute to the positive or negative moods being elicited; consequently, how these musically-induced positive and negative moods influence the effectiveness of depression alleviation. The paper will roll out a qualitative analysis on each musical feature, or what is called “musical element”, on how much potential they have for triggering positive or negative moods. Additionally,

the paper will list the model that bridges up the general connection between music and mood, as well as the model connecting mood and depression. The paper will include a hypothesis of a deeper-level connection between music and depression alleviation or prevention. In the final part, this paper will summarize the findings and the models, listing detailed suggestions on “what music should one listen to alleviate depression”, providing useful assistance to either music therapists or anyone eager to alleviate depression or prevent this disease from happening at the first place. This paper will end by discussing the current limitations while calling for future studies with larger, more comprehensive, and accurate scopes.

II. Literature Review on Musical Features Triggering Positive or Negative Moods

Li & Cao (2016) stated that “the emotional impact that music brings to people is straightforward: while uplifting music makes people feel energized and pleasant, sad music makes people feel sorrowful” in their study on how music therapy influences college student’s mental well-being. However, it is still worth discussing from a microscopic view, that what musical features make uplifting music sound happy, and what musical features make sad music sound sorrowful on earth.

Before plunging into the detailed analysis of each musical feature, it is valuable to decide which musical features are highly contributive in eliciting listeners’ positive or negative moods, and which musical features barely play a role in this aspect. Regarding this question, scholars’ answers have a relatively high alignment compared to each other. Some of the earlier scholars have only listed tempo and tonality, that is, how fast the music goes and which tone system the music is employing (Kastner & Krowder, 1990, Huang, 2007, Cai & Pan, 2007, Yu, 2010). Apart from these

features, Thompson & Quinto (2011) added supplementary musical features, including the intensity (loudness), extend of consonance or dissonance, as well as pitch height. Similarly, Elst et al (2021) stated that the constituent features of music include melody, harmony, and rhythm, together forming a musical cycle that give rise to action, emotion, or learning as a result. Likewise, a relatively inclusive list of musical features was raised by Sun & Wang (2017), including tonality, tempo, pitch height, loudness, and timbre. A more authoritative list from the Association for Music and Imagery (AMI) includes the structure of the music, volume, timbre, and tempo, all of which determine whether or not a safe and belonging feeling can be created to the listeners, and whether positive emotions can be triggered as a result.

Combining all the findings above, the following part will focus on rhythmic pattern (tempo and meter), harmonic (tonality and expectation), melody (tension building and releasing), timbre (sound texture), and musical structures (organization for a piece). While some of the features raised above were combined, this list exhausts all the significant musical elements. The end of this part will also cite discussion voices on whether these features should be discussed individually or as a whole in a singular musical piece.

One question that seems controversial is whether subjective personal traits will influence the potential intensity of emotion these musical features bring. On one hand, Yu (1985) stated that female are more sensitive to the musical features comparing to male as the result of his experiment; Likewise, Juslin & Lindstrom (2010) argued that the age, gender, experience in musical education are influencing factors influencing the intensity of perceived emotion from music. On the other hand, however, Huang et al (2007) presented an opposing argument by bringing up the result of

his experiment that gender does not significantly influence perceived emotion. Still, despite of the seemingly-disputed ideas being addressed, it is still reasonable to come up with a universal pattern between each musical feature and how they trigger positive and negative moods, and how they alleviate depression as a result.

Another disputable point is, why lyrics are not counted as a feature to be analyzed. It indispensable to say that for a large amount of contemporary music pieces, especially for pop songs, lyrical content supplements the musical contents by fulfilling storylines or explicit emotional drain to the melody, making music presenting both linguistic and non-linguistic characteristics at the same time (Li & Cao, 2016). Nevertheless, Aigen (2020) indicated that according to the “Music-Centric Theory”, listening to the musical elements themselves are sufficient for listeners to ameliorate their mental states, while adding linguistic assistance will not only be unnecessary, but also badly influencing the authenticity of musically-induced emotions. Aigen had also quoted Mary Priestley’s argument in 1994, that in music therapy, linguistic elements and musical elements will counteract on each other, hindering listeners to feel the deep-inside emotion and meaning that a music originally intend to convey. Additionally, studying the relationship between lyrics and music will involve complex differences in cultural systems as well, potentially distracting this paper. Hence, with all these being said, lyrics are not counted as a musical feature analyzed in this paper.

The following part is a detailed analysis on each musical feature regarding how they potentially elicit positive or negative mood of listeners:

(1). Rhythmic Pattern (Tempo & Rhythm)

Most scholars in both Eastern and Western music cultures tend to believe that faster tempos elicit a more positive mood, while slower tempos have the opposite effect. It is believed that faster tempos like allegretto or allegro will generally trigger an exciting and uplifting feel, while slower tempos like andante and adagio will generally trigger a sorrowful, mourning feel, consequently leading to anxiety and depressive moods (Huang, 2007, Zhang, 2008). Thompson, together with Balkwill in 1999, and with Ilie in 2011, have also pointed out that listeners feel more energetic as a result of faster stimulus. A more comprehensive theory was provided by Wang (2015) in his book “*Composition Theory and Practice*”, that faster tempos are linked with livelier and more energetic pieces in most cases, including dance music, scherzos, battle music, and dramatic music, while slower tempos are linked with music with sadder themes in most cases, including mournful love songs and stirring strains.

However, it is also believed that music with slower tempos can also trigger one specific kind of positive mood: despite its nature of a slower repetitive pattern that seem to be intentionally sorrowful, slower tempos have better chances of creating a sense of relaxation, which help people relief from stress and anxiety, consequently bringing a positive mood as well (Chen, 2003). Liu et al (2017) have further supported this idea by their experimental result, which is, playing slow-tempo (60-80bpm) classical music to pregnant participants significantly ameliorate their symptoms of anxiety and depression by creating a calm and chilled feeling to them.

Besides how fast or slow the tempo of a music is, Huang (2007) has also indicated that the meter works as an assistant feature of music besides tempo; specifically, he pointed out that besides faster tempo, round-beat including 3/4 and 6/8 also tend to bring a higher extend of positive feeling to

listeners comparing to square beats including 2/4 or 4/4. This is to say, the highest level of ecstasy can be brought by fast round-beat music, while the highest level of sadness can be brought by slow square-beat music.

With all these being said, it will be more accurate to conclude that while slower tempos can either trigger a sad mood or a relaxed mood, faster tempos tend to narrow down to uplifting moods mainly. Besides, round beats have a greater potential to trigger positive moods compared to square beats.

(2). Harmonics (Major vs. Minor, Meeting vs. Violating Expectations)

Harmonics are also widely admitted as the major feature of music that influences the category of emotion it brings to the listeners. Among all the complex theories about harmonics, one major category is major tones compared to minor tones. Indeed, this is another point where most scholars' ideas highly align with each other: major tones tend significantly more to trigger positive moods and instant feelings, while minor tones tend majorly to trigger negative moods as instant feelings (Kastner & Crowder, 1990, Khalifa, 2005, Li & Cao, 2016). One might argue that much uplifting music is also in minor tones, for instance, Ave Max's "*Kings and Queens*", but what the scholars are referring to here is that most sad songs are written in minor tones: specifically, their last chordal progression resolves to a minor tone, giving a sense of "depressive ending" and therefore triggering a negative emotion as a result.

In fact, the finding raised above is based on scientific facts. For instance, the way different pitch intervals are combined directly influence the felt intensification: minor tonalities include more highly-intensified intervals, making the tonal system acquiring more negative musical moods,

while major tonalities include more low-intensified intervals, so the tonal system sound more positive (Zhou, 1999).

Additionally, Kastner & Crowder (1999) had come up with their argument comparing the effect of major and minor tonalities based on the result of their experiment, which the participants were children without musical training, indicating that human's emotional react to major and minor tonalities are innate rather than from postnatal learning or training. Their argument can be verified by Lamme (2012), who indicated that musical pitches and tonalities are detected automatically by our minds, specifically, a tonotopical organization from the anterior to the posterior of our brains, which classifies different pitches correspondingly. Lamme stated that minor tone stimulates neural constructions in our brain including the amygdala and retros penial cortex, which as a result, blocks the positive feelings from generating. Therefore, with these materials being cited, it is reasonable to conclude that listening to music with major tones has a greater potential to trigger listeners with positive emotions compared to those with minor tones.

Moving from major vs. minor, other musical aspects exist in the field of musical harmony. One that stands out according to how Juslin et al (2019) in the article "*Musical Emotions Explained*" is whether the harmonious patterns match the listeners' expectations or violating them: if a person abruptly detects an "unwanted" harmonic progression that greatly contradicts what is predicted, an Event-Related-Potential (ERP), which means a sudden but strong neurotrophic activity happening in this listener's nerve system, will cause a "surprise" or even a "shiver" to the listeners, consequently bringing either a strongly amazed feeling, which tends to lead to a positive mood, or a strongly aversive feeling, which tend to lead to a negative mood. This indicates that while

listening to pieces with harmonic changes contradicting our anticipating is not guaranteed to trigger more positive or negative emotional responses, doing so can intensify the positiveness or the opposite of the mood that a listener acquires from the music.

(3). Melodies (Building Tension vs. Releasing Tension)

Most musical scholars under the influence of both Eastern and Western cultures also converge on the notion that each pitch in a melody has its unique feature, represented mood, and supposed position in a cycle. Thopson & Quinto (2011) in their article “*Music and Emotion: Psychological Consideration*” cited a thesis from Cooke (1959), who proposed that music pieces are consisted of different melodic features as well as patterns that have significant emotional influences. Cooke especially believed that melodic intervals, which means the pitch distance between two consecutive notes in a melody, provide an important cue of what emotion the music offers. The following are the theories that connect interval of leaps and emotions they bring:

- An ascending major third interval represents joy and triumph.
- An ascending major sixth interval represents a sense of longing for pleasure.
- A minor sixth interval reveals an anguish feeling.
- An augmented fourth stands for hostility and disruption.

Similar to Thopson & Quinto (2011), Aigen (2020) has cited on a melodic theory brought up by Zuckerkandl (1956) in his article “*Music-centered Music Therapy*”, which stated that musical scale ascending from its previous note to the following note with either a half or full step (e.g.: I to II) can be ascribed to “the first step of counteracting”, or to say, “departing from its origin”. In contrast, resolving from a seventh note (VII) back to the tonal note (I) can be ascribed to the process of

“approaching the destination”. While this constructs the basic rules of music composition in Western musical theories, it is also indispensable to say that experiencing the tensions built and resolved in the melodies will enable the listeners to experience an “emotional journey”: if the end of the phrases are properly resolved back to tonal scores, a sense of safety and belonging will be triggered, providing vast positive emotions as a result (Aigen, 2020).

Building on the intricate relationship between melodic features and emotional impact, a group of scholars from the University of California, Davis and Université Lyon has studied the comprehensive relationship between the expectations of musical chordal progressions, sensory mechanisms, and cognitive mechanisms (Collins et al, 2014). Their paper “A Combined Model of Sensory and Cognitive Representations Underlying Tonal Expectations in Music” showed that listeners have a certain level of expectations for chordal progressions for creating or releasing tension when approaching the end of each phrase or part. Their models have indicated that if a melodic tension is left unresolved, listeners’ arousal in anticipation shall be aroused; on the other hand, if the proper chordal resolution is used, a stronger feeling of safety and completion will be evoked, while this phenomenon will be stronger for listeners with more musical expertise as their cognitive mechanisms are triggered to a higher extend (Collins et al, 2014). In most cases, the feeling of “safe and completed” will induce a higher calming effect, bolstering the emergence of positive moods, while unexpected chords will bring disappointments or unsettling senses.

Indeed, their models apply to real musical scenarios. One of the examples is Greg Laswell’s song “*Off I Go*,” a sad farewell-themed song that expresses a strong sense of uncertainty, in which he designed the chordal progression of the whole piece repeating “(i), (III), (VI), (IV7)” in G# Minor.

While the unusual major-minor seventh chord at the end of each phrase is rare enough to induce unexpectedly, Greg keeps this repetition to the very end of the music without resolving the piece to a tonal chord, helping to highlight the sense of uncertainty. As shown by Collin et al's 2014 model, this kind of music will not be suitable to listen to if one aims to get an instant sense of safety and a positive mood. Rather, these groups of listeners should aim for pieces with more positive content or themes that align better with popular tonal expectations.

Music scholars from Eastern cultures also agree with similar theories. One example that Sun & Wang (2017) raised in their article "*The Impact of Four Different Musical Themes on Controlling Aggressive Behaviors*" is referring to an ancient Chinese pharmacy book, the "*Huangdi Neijing (Emperor Body Channel)*": as traditional Chinese music is using the pentatonic scale, each note in it has its unique characteristic and mood designated to bring up:

- Gong (I in the major scale in Western music): refers to intense emotion
- Shang (II in the major scale in Western music): refers to happiness and joy
- Jue (III in the major scale in Western music): refers to thoughtfulness and introspection
- Zhi (V in the major scale in Western music): refers to worrisome
- Yu (VI in the major scale in Western music): refers to fearsome

Sun & Wang (2017) stated that despite these feelings are rarely ever perceived by each note when most people nowadays listen to a piece of pentatonic-scale music, it is still admissible that each note, depending on its position in a musical phrase and its relationship to the tonal note, determines the intensification a specific melody gives to the listeners, consequently deciding how positive or negative the mood is established for listeners as a result. Sun & Wang's theory especially converges

with the previous two articles in the aspect of how well the notes depart or resolve from a relaxed, belonged-feeling tonal state.

(4). Timbre (Sound Textures of Instruments)

While very few literatures have addressed a focus on the timbre of music, some scholars do indicate that certain “textures” or “colors” of music can also influence the listening experience as well as the potential mood triggered. Two of them are Li & Cao (2016), who pointed out that timbres that are softer, gentle, and mild have greater potential to bring a chilling and therefore positive mood for listeners. What they are referring to is that, comparing to those heavy fuzzy metallic sounds, pure acoustic instruments including an acoustic guitar or woodwind, which sound gentler and softer because they gather more energy on the fundamental frequency on each note, tend to be more suitable for listeners seeking to alleviate from anxiety or getting relaxed.

Li & Cao (2016) has also indicated that the natural timbre of some musical instruments boosts emotions themselves. They raised the example of a piece called “*Wang Ning Mei (Sorrow Love)*”, the theme music for a teleplay series filmed in 1987 based on a famous traditional novel, “*A Dream in Red Mansions*”, a sad love story between a couple and the wane of two originally flourishing families. The instrumentation of this piece in the chorus parts involve abundant octave unisons of Erhu, a traditional Chinese bowed-string instrument that has a timbre highly similar to crying sound. Another major instrument involved in this piece is Zheng, a traditional Chinese plucked-string instrument, such that this piece involve abundant portamentos, which also heavily utilizes its “nostalgia-oriented” timbre. Li & Cao had also pointed out that the addition of grace notes, especially those with a shorter interval to the main note, helps magnify the sadness expressed by

the music. Their thesis supports the idea that the texture of specific instruments or voices directly produce positive or negative moods themselves in the first place.

Therefore, it is important to choose pieces with appropriate instrumentation if one aims to create an uplifting listening experience, or to reflect on his or her sad feelings.

(5). Musical Structure

For decades, the structure of a music, referring to how a piece of organized to evolve over time, is also considered as a significant feature of music that influences the mood it bring to audiences. While previous features focus on microscopic elements within a piece, the structure of music is a more macroscopic one, giving that it establish the framework that determines the organization of different melodies, chord progression, and instrumentations. A few pioneer scholars in this area include Mahler et al (1975) and Summer (1995), all of whom have indicated that a “stable” musical structure can give listeners a “safety feeling”, for its nature of returning to the original theme melodies and tonalities, which make participants report having a sense of “returning to the warm welcomed home” and “travelling back to the carefree childhood times”.

Several years later, other scholars come up with similar notions on musical structures. For instance, it is stated that a listener’s deepest appreciation of music can be based on the structural features of a musical work (Gabrielsson & Lindstrom, 2003). There were also scholars who indicated that musical structures unify the organization of different elements of a singular piece or multiple pieces in a series, which consequently help listeners focus on the music as a tangible object by

giving metaphors to music by making them similar to a process of emotional communication (Kreutz et al, 2008).

On the contrary side, there exists a voice claiming that music without a clear and organized structure tend to offer listeners with mood changes, but more likely to be linked to the sense of relief and relaxed rather than intense emotional journey given by organized structures (Li & Cao, 2016). They pointed out that this kind of “New-Era Music” with a free musical structure and simple melodies are commonly used during music therapies aiming to relax the participants. In fact, their argument actually aligns with those described above, forming the logic that the intensity of mood change is positively related to the structure of music phrases.

Therefore, this is to say, if one aim to adjust the mood by experiencing an “emotional journey” going up and down, a larger-scale music with clear structure, obvious comparison between episodes would be appealing; on the contrary, if one aims to relax and get rid of anxiety, then listening to a piece with a singular phrase or without a clear structure, including those lo-fi music on YouTube streaming channels, would be a much better choice instead.

Conclusion for this part

The passages above have analyzed five major features of music and how each one of them are related to the positive and negative mood induced, as well as what kind of music should each individual listener choose under different mental needs. A question being raised regarding this point is: should music features be analyzed individually, so that it will be clear for listeners to pick the right song for their emotional purposes, or will it be more valuable and precise to analyze music

pieces as a whole, such that multiple musical features should be analyzed after being combined? Indeed, Sun & Wang (2017) indicated in their article, that one should be cautious when analyzing each musical features individually rather than analyzing a piece of music as a whole with all its features, due to the fact that one single piece shall contain multiple musical features that tend to bring different emotions. It is true that distinct musical elements in a piece have chances to produce contradicting emotional purposes, for instance, Schuman's "*Traumerei 1838*" has a slow tempo of only 66 bpm (lento), which tend to give a negative mood, but was composed in F major, which contrastingly create a more pleasant atmosphere. However, in this specific case, the major tonality significantly overrides the slow tempo, and audiences are tending to feel a more dreamy, relaxing scenario rather than a sorrowful mourning. Indeed, the same mechanism applies for copious amounts of classical or temporal music, where one significant musical feature dominates the resulting mood of the entire piece.

Additionally, Zhang (2011) pointed out that music with a unified theme will have high similarities between its tonality, melodic pitches, and rhythmic patterns. This means that there exists some composers design their music in the way that all features are coherent, aiming for a singular theme, or creating a pure-and-direct emotional result to listeners.

Therefore, with all these above being analyzed, when it comes to the time for choosing music for mood regulation and therapy for depression, one should either prone to pieces that have every feature aligning together, creating either an uplifting or sorrowful mood, or deliberately selecting those having one or a few features that stand out among others, such that they dominate the resulting mood of the piece. Carefully examining the features of a piece on the potential mood it

brings can help maximizing the effectiveness of musical therapy, resulting in a better adjustment of emotion, and consequently, alleviating or preventing depression more efficiently

III. Models Connecting Music, Mood, and Depression Alleviation

(1). Models Connecting Music and Mood

One of the most recognized scholars in the field of connecting music and human beings' everyday-life emotions is Juslin, who integrated and optimized multiple studies and experimental results from previous pioneering scholars, one of whom is Meyer, who proposed the cardinal idea of “the alignment of violation music expectancy offers special mood” in this field of study. A highly contributive model that Juslin came up with was the famous BRECVEMA model, which exhausts comprehensive mechanisms of how music evokes emotions for listeners. This model is not only recognized in Western musical emotion studies but also in some from the East, including Sun & Wang (2017), who cited this model for their study relating musical themes and the control of aggressive behaviors.

According to the article “*What Makes Music Emotionally Significant*” by Juslin himself, the BRECVEMA model includes the following mechanisms explaining how music trigger emotional responses:

- Brain stem reflex: an instinctive response to acoustic events, like extreme or sudden increase of volume or musical speed.
- Rhythmic entrainment: a smooth adjusting system between physical and motor body rhythm to the rhythm of the music.

- Evaluative conditioning: pairing a piece of music to external positive or negative stimuli.
- Contagion: an analogy of perceived emotion from timbre and expression of the music
- Visual imagery: imagined images or scenes of an emotional character that metaphorically describe the musical structure or features
- Episodic memory: a recollection of a particular past event of a listener triggered specifically by a piece of music
- Musical expectancy: a reaction to the musical structure and features that unfold as time goes on, based on how they meet or violate the listener's expectations
- Aesthetic judgement: a subjective aesthetic evaluation to the music

Despite being a complex model that integrate so many mechanisms, it actually corresponds to many findings between individual musical features and emotional trigger listed in the previous literature review part. For example, rhythmic entrainment is related to the “tempo” feature of a piece of music: faster tempos makes the repetition patten of the music sound more obvious, therefore mobilizing the motor system in listeners' internal bodies, and therefore creating a vivacious and uplifting mood as a result (Sun & Wang, 2017); contagion correlates with the “timbre” feature, which directly trigger listeners to pair the texture of the instrument or singing voice to a mood as the perceived emotion from the current segment of the piece; musical expectancy though, can be related to several musical features, including rhythmic pattern, harmonic progression as well as the tension created or diminished by individual notes in the melody, in the way that violating the musical expectancy either create a surprising or an aversive emotion, while following the musical expectancy will maintain a smooth emotional response to the listeners (Meyer, 1956, Lamme, 2012, Juslin, 2013).

Juslin had also highlighted the importance of exterior stimulating factors as well as listener's past memories evoked by a piece of music. Just as how evaluative conditioning and episodic memory are described in the BRECVEMA model, Juslin and Lindstrom (2010) stated that besides objective musical features, subjective experiences as well as external environments will also influence the perceived emotion from a piece of music. The significance of this idea its alignment with the discovery of the cause of depressive moods by Hansson et al (2010), who indicated that negative events in a person's memory, as well as out-source stimulus, even including weather and season, are causes of the symptom of depression or low moods.

Therefore, combining Juslin's music-emotion model and the results of the study conducted by Hansson's team, it is important to note that for the purpose of mood regulation, one should not only evaluate the objective musical features, but also more importantly, pay special attention to how the music evoke positive or negative past memories, as well as how external stimulus influence the musical listening experience. For instance, while most people believe that The Beatle's "*Hey Jude*" conveys a more positive mood due to its F-major tonality and bright timbres, if the song correlates to a relationship breakup in the past, the person should still avoid listening to it for the musical therapeutic purposes; by parity of this reasoning process, while heavy metallic music like Skrillex's "*Scary Monster and Nice Sprites*" (nominated with Grammy Award in 2012) do convey an uplifting, exciting, and moving-like emotion or feeling, it is still not the best choice for someone who aim to avoid anxiety in a hot temperature or with other irritating stimulus like an itchy back.

(2). Models Connecting Music and Depression Alleviation

With all the analysis above on how music brings positive or negative emotions, it is valuable to link them back to the ultimate purpose of this paper: alleviating depression. One of the models that correlate positive and negative mood was raised by Young et al (2019) in their article “*Positive and Negative Emotion Regulation in Adolescence: Links to Anxiety and Depression*”, which is a quadruple-dimension research model, focusing on four distinct categories of a person who is encountering anxiety or depressive symptoms, including self-report of emotions, behavior observations, psychological investigation, and neural scanning techniques including fMRI. Young et al pointed out that while the other three dimensions of analysis do not indicate a clear relationship between emotion and depression alleviation, self-reported studies strongly suggest that emotional regulation skills can mediate the effect between negative early-life events as well as resulting psychopathologies. This reveals that one of the four dimensions of this research model indicates that obtaining the ability to adjust emotions, either in a positive direction or not, contributes to the amelioration process of mental disorders, including depression.

This conclusion points to an important question raised in the introduction part of this paper: how do positive mood and negative mood obtained from music pieces and specific musical features compare with each other in the effect of depression alleviation? Specifically, while it is widely admitted that positive moods are more likely to bolster a person to acquire uplifting, cheering, and hopeful moods, and at the same time, forgetting unpleasant events (Saarikallio & Erkkila, 2007), while negative mood intensifies a person’s vulnerability to negative stimulus, which makes that person even more prone to being sensitive to negative stimulus and aggravating depression or anxiety (Yuan et al, 2014), there still exists a copious number of people who actually prefer

listening to sad music in order to “reflect on their current depressive emotions”, and they report that doing so actually buttress them to recover better in a longer term (Saarikallio & Erkkila, 2007).

This seemingly paradoxical pair of findings actually align with each other, given that different people have different abilities, and more importantly, attitude towards negative emotions evoked by music when being in a low mood or a depressed mental state. From the scientific aspect of biology and neural science, it actually turns out that “enjoyment of negative emotions of music” is a result coming from the activation of a node in the neural network that inhibits the displeasure center of the brain when enjoying the aesthetic context of sadder music, and as a result, pleasure arises from the mere process of activation (Schubert, 1996). Additionally, from the aspect of mood and psychology itself, Sachs et al (2020) pointed out that for a certain group of people, immersing themselves in the negative mood brought by musical features or by the bad memories evoked by the music will bolster them to feel “understood”, and such reflection greatly help them to gain a more throughout alleviation, comparing to directly attempting to pull themselves away from the sad emotions by positive music.

Who could these group of people be? How do they utilize negative emotions better for depression alleviation compared to others? The answer to this question was straight forward, and scholars’ ideas highly converges: those who are reflective, and those who enjoys rumination, are those who obtain more solid abilities to turn the negative emotions into powers that heals the wounds in their minds (Garrido & Schubert, 2013, Sachs et al, 2020). The definition of the word “rumination” in this context refers to the ability to utilize music for reflecting, reinterpreting, reappraising, and

therefore re-evaluating events or situations evoking negative emotions (Gross & John, 2003). Numerous studies have shown that for those who have higher abilities in rumination, Sachs et al (2020), those who comparatively enjoy emotional “absorption” that trigger self-reflection as a result, are people who have higher chances of getting better amelioration for both temporal depressed mood and long-term symptom of depression.

Linking the two types of models together, it will be reasonable to come up with the deduction conclusion that, while choosing music for depression alleviation should start on filtering the pieces based on their individual and combined musical features, one should absolutely reckon with the type of memory or external factors that the piece links to; if the piece is found out to carry sad emotions, brings bad memories, or correlates with external stimulus that might further reflect on the negative moods, one should evaluate his or her personal ability and favorability to be reflective through rumination.

IV. Summarization & Discussion

Acknowledging that depression is influencing an increasing number of people across different countries around the globe, and given its irritating, mind and body damaging, and social-ability-hindering nature, a feasible, easy-to-acquire, and long-term effective therapeutic method is yearned by people in nowadays world. While it is proven that music therapy is one of them, thanks to the prevalence of digital music players and platforms buttressed by modern technology, not all music is created equal to ameliorate depressive mood or recover from this painful mental disorder. Despite different people acquiring different musical tastes, and subjective experiences, and holding

different life values under the influence of diverse cultures as well as social norms, there does exist a clue that will work for everyone across the globe to pick the right pieces for depression alleviation. Starting from careful analysis of each musical feature's potential influence on mood control, to incorporating models that join music listening and depression alleviating with the pivot point of mood combined with influential personal traits, the following list includes the finalized suggestions on how to find the right song for the designated purpose of mood-regulating and depression alleviating:

1. If one aims to obtain fast and direct uplifting emotion, he or she should prefer music with faster tempos. If possible, choose music with round beats over square beats. Additionally, major tonalities perform better in providing immediate positive emotions than minor tonalities.
2. If one aims to relax, especially for those aiming to alleviate anxiety, a piece with slower tempos, lower volumes, milder textures, and free structures will be a better choice.
3. Avoid music with instruments or voices that obtain "crying-like" timbres if aiming to avoid evoking additional sad emotions.
4. Listening to music that properly resolves tensions by proper harmonic or melodic progression, as well as those repeating the theme note towards the end helps obtain a greater sense of safety and belonging.
5. Other than the musical features themselves, pay special attention to whether the piece of music, or certain melodies in the piece, will evoke negative memories, or intensify negative stimuli that are currently existing.

6. Before getting immersed in the intense sad emotion brought by music, one should evaluate his or her ability and willingness to reflect and re-evaluate negative memories or stimuli, and only proceed if a “yes” answer is given.

While these conclusions and suggestions can provide helpful clues for various kinds of people: from music lovers to people aiming to save themselves from depression using music, and even possibly to some professional music therapists, this paper still has several limitations. First of all, nearly all the musical features in the literature review part are analyzed according to the notion of Western musical theory. As people are grown and educated under the influence of different musical and social cultures, this singular 12-note system theory might not apply to every person. Secondly, despite this paper’s proven not to incorporate “lyrics” as one of the musical features to focus on, the truth is the content delivered by the lyrics not only has literal aesthetic values but also potentially influences the evoked emotion of that music. Meanwhile, despite the theories of music and how each feature will potentially influence emotion are proposed by professional scholars or experts, the conformity process of them in this paper are still relatively subjective. Finally, while models connecting music, emotion, and depression alleviation are found and involved in this paper, there were only two of them, which are Juslin’s BRECVEMA Model and Young’s team’s 4-dimensional Emotion-Depression Model, so more of them are needed to be involved and analyzed for a more comprehensive comparison and analysis.

Therefore, using this paper as a starting point, future studies on “what features of music will elicit positive and negative moods and how they alleviate depression” should expand to more diversified musical cultures around the world, while incorporating literal and lyrical studies and analysis. At

the same time, additional models should also be incorporated and analyzed, with experts gathering participants to do specific experiments to validate the findings. Despite these expectations that future studies regarding this topic will significantly increase the scope and difficulty of the research, it would still be necessary and constructively helpful, as they result in more accurate results that help more people around the globe to find the correct “musical antidote” for their depressive moods or symptoms. Consequently, on a higher level, healthier individuals will form a more solid social network, resulting in a more harmonious cross-society and global relationship.

Reference:

- Aigen, K. (2020). *Music-centered music therapy*, 1–279.
- Batt-Rawden, K. B. (2010). The benefits of self-selected music on health and well-being. *The Arts in Psychotherapy*, 37(4), 301-310.
- Batt-Rawden, K., & Denora, T. (2005a). Music and informal learning in everyday life. *Music Education Research*, 7(3), 289-304
- Cai, Y., Pan, X. (2007). The experimental study on musical tempo and tonality's influence on the emotion of college students (音乐的速度与调式对大学生情绪影响的实证研究). *Psychological Science (心理科学)*
- Collins, T., Tillmann, B., Barrett, F. S., Delbé, C., & Janata, P. (2014). A combined model of sensory and cognitive representations underlying tonal expectations in music: From audio signals to behavior. *Psychological Review*, 121(1), 33-65.
doi:<https://doi.org/10.1037/a0034695>
- Cooke, D. (1959). *The language of Music*. London: Oxford University Press
- Du, Q., Yu, Z. (2011). *Experimental studies on the intervention of musical therapy on depression symptoms of college students (音乐治疗对大学生抑郁症状干预的实验研究)*
- Duszynski-Goodman, L, Henderson. (2023, September 29). *Mental health statistics and facts in 2023*. Forbes. <https://www.forbes.com/health/mind/mental-health-statistics/>
- Foster Vander Elst, O., Vuust, P., & Kringelbach, M. L. (2021). Sweet anticipation and positive emotions in music, groove, and dance. *Current Opinion in Behavioral Sciences*, 39, 79–84. <https://doi.org/10.1016/j.cobeha.2021.02.016>

Gabrielsson, A., Lindstrom Wik, S. Strong experiences related to music: A descriptive system.

Music Sci. 7, 157-217 (2003)

Garrido, S., & Schubert, E. (2011). Negative emotion in music: what is the attraction? A

qualitative study. *Empirical musicology review*, 6(4), 214-230.

<https://doi.org/10.18061/1811/52950>

Garrido, S., & Schubert, E. (2013). Adaptive and maladaptive attraction to negative emotions in

music. *Musicae Scientiae*, 17(2), 147–166. <https://doi.org/10.1177/1029864913478305>

Garrido, S., & Schubert, E. (2015). Moody melodies: Do they cheer us up? A study of the effect

of sad music on mood. *Psychology of Music*, 43, 244-261. Doi:

10.1177/0305735613501938

Gross, J. J., John, O. P. (2003). Individual differences in two emotion regulation processes:

Implications for affect, relationships and well-being. *Journal of Personality and Social*

Psychology, 85, 348–362.

Hansson, M., Chotai, J., & Bodlund, O. (2010). Patient's beliefs about the cause of their

depression. *Journal of Affective Disorders*, 124(1-2), 54-59.

<https://doi.org/10.1016/j.jad.2009.10.132>

Harvard Medical School. (2022, January 10). *What causes depression?*. Harvard Health.

<https://www.health.harvard.edu/mind-and-mood/what-causes-depression>

Huang, W. (2007). Experimental study on the influence of classical music on college students'

emotions (经典音乐对大学生情绪影响的实验研究). *Hunan Normal University, China*

- Ilie, G., W. F. Thompson. (2006). A comparison of acoustic cues in music and speech for three dimensions of affect. *Music Perception*, 23: 319-29
- Juslin, P. N., Vastfjall. (2008). Emotional responses to music: The need to consider underlying mechanisms. *Behavioral and Brain Sciences*, 31: 559-75
- Juslin, P. N., Liliestrom, S., Vastfjall, D., Barradas, G., Silva, A. (2008). An experience sampling study of emotional reactions to music: Listener, music, and situation. *Emotion*, 8, 668-683
- Juslin, P. N. (2013). From everyday emotions to aesthetic emotions: Towards a unified theory of musical emotions. *Physics of Life Reviews*, 10(3), 235–266.
<https://doi.org/10.1016/j.plrev.2013.05.008>
- Juslin, P. N. (2019). *Musical Emotions Explained*.
<https://doi.org/10.1093/oso/9780198753421.001.0001>
- Kastner. M. P., Crowder, R. G. (1990). Perception of the major/minor distinction: IV. Emotional connotations in young children. *Music Perception: An Interdisciplinary Journal*, 8(2), 189-201
- Khalifa, S., Schon, D., Anton, J. L., Liegeois-Chauvel, C. (2005). Brain regions involved in the recognition of happiness and sadness in music. *Neuroreport*, 16(18), 1981-1984
- Kreutz, G., Schubert, E, Mitchell, L. A. (2008). Cognitive styles of music listening. *Music Perception*. 26, 57-73

- Lamme, M. (2012). The musical brain: How music evokes emotions and related positive feelings. *Neuroscience Cognition*, 1-31,
<https://studenttheses.uu.nl/handle/20.500.12932/11290>
- Li, K., Cao, C. (2016). *Studies on the effect of musical therapy on the mental healthiness of college students* (音乐治疗对大学生心理健康的价值研究).
<https://wenku.baidu.com/view/2ff0ef010a1c59eef8c75fbfc77da26924c5966e?pcf=2&re=vi>
[ew&bfetype=new&bfetype=new&_wkts_=1702514157774](https://wenku.baidu.com/view/2ff0ef010a1c59eef8c75fbfc77da26924c5966e?pcf=2&re=vi)
- Li, Q., Zhou, S. (2020). *Studies on Psychological Musical Intervention for Mental Healthiness of Long-distance Mariners* (音乐心理干预介入远洋海员心理健康研究)
- Liu. X., Liu. C. (2011). The study on the emotion evoked by traditional Chinese music (中国古典音乐诱发情绪的生理活动研究), *Psychologic Health Magazine of China*, 19(2), 157-159
- Mahler, M., Pine, F., Bergman, A. (1975). The psychological birth of the human infant. *New York: Basic Books*
- McFerran, K. S., & Saarikallio, S. (2014). Depending on music to feel better: Being conscious of responsibility when appropriating the power of music. *The Arts in Psychotherapy*, 41(1)
- Meyer, L. B. (1956). Emotion and Meaning in Music (Emocion y significado en la musica), *The University of Chicago*, 24(1). 89-92
- Priestley M. (1994). *Essays on analytical music therapy*. *Barcelona Publishers*

- Sachs, M. E., Damasio, A., & Habibi, A. (2020). Unique personality profiles predict when and why sad music is enjoyed. *Psychology of Music*, 49(5), 1145–1164.
<https://doi.org/10.1177/0305735620932660>
- Saarikallio, S. (2008). Music in mood regulation: Initial scale development. *Musicae Scientiae*, 12, 291-309
- Saarikallio, S., & Erkkilä, J. (2007). The role of music in adolescents' mood regulation. *Psychology of Music*, 35(1), 88–109. <https://doi.org/10.1177/0305735607068889>
- Schubert, E. (1996). Enjoyment of negative emotions in music. *Psychology of Music*, 24: 18–28.
- Schubert, E., Halpern, A. R., Kreutz, G., & Garrido, S. (2018). Attraction to sad music: The role of imagery, absorption, and rumination. *Psychology of Aesthetics, Creativity, and the Arts*, 12, 251–258. doi:10.1037/aca0000160
- Shinohara, K. et al, (2013). *Behavioural therapies versus other psychological therapies for depression*. Cochrane. https://www.cochrane.org/CD008696/DEPRESSN_behavioural-therapies-versus-other-psychological-therapies-for-depression
- Stige B. (2002), Culture centered music therapy. *Barcelona Publishers*, 191-193
- Summer L. (1995). Melding musical and psychological processes: the therapeutic musical space. *Journal of the association for music and imagery*, (4): 37-38
- Sun, J., Wang. F. (2017). *The Influence of 4 Themes Music To the Implicit Aggression and the Explicit Aggression (四种主题性格的音乐对内隐攻击性和外显攻击性的影响)*.

https://xueshu.baidu.com/usercenter/paper/show?paperid=f43f5adbf116646ca148f7005faf733e&sc_from=pingtai4&cmd=paper_forward&title=4%E7%A7%8D%E4%B8%BB%E9%A2%98%E6%80%A7%E6%A0%BC%E7%9A%84%E9%9F%B3%E4%B9%90%E5%AF%B9%E5%86%85%E9%9A%90%E6%94%BB%E5%87%BB%E6%80%A7%E5%8F%8A%E5%A4%96%E6%98%BE%E6%94%BB%E5%87%BB%E6%80%A7%E7%9A%84%E5%BD%B1%E5%93%8D&wise=0

Taruffi, L., Koelsch, S. (2014). The paradox of music-evoked sadness: An online survey. *PLoS ONE*, 9(10), Article e110490. doi:10.1371/journal.pone.0110490

Thompson, W. F., & Quinto, L. (2011). Music and emotion: Psychological considerations. *The Aesthetic Mind Philosophy and Psychology*, 357–375.

<https://doi.org/10.1093/acprof:oso/9780199691517.003.0022>

Trapnell, P. D., Campbell, J. D. (1999). Private self-consciousness and the five-factor model of personality: Distinguishing rumination from reflection. *Journal of Abnormal Psychology*, 83, 268-277

Van Goethem, A., & Sloboda, J. (2011). The Functions of Music for Affect Regulation. *Musicae Scientiae*, 15(2), 208-228

Vuoskoski, J. K., Thompson, W. F., McIlwain, D., & Eerola, T. (2011). Who enjoys listening to sad music and why? *Music Perception*, 29(3), 311–317.

<https://doi.org/10.1525/mp.2012.29.3.311>

Wang, H. (2015). *Theories and Practice of Composition (作曲理论与实践)*. China Book Publishing House.

- Witters, D. (2023, September 14). *U.S. depression rates reach new highs*. Gallup.com.
<https://news.gallup.com/poll/505745/depression-rates-reach-new-highs.aspx>
- Young, K. S., Sandman, C. F., & Craske, M. G. (2019). *Positive and Negative Emotion Regulation in Adolescence: Links to Anxiety and Depression*.
<https://doi.org/10.31234/osf.io/uwy6q>
- Yu, Y. (1985). Experiment and discussion on music-induced mood and emotional experience (音乐引起的情绪、情感体验的实验与讨论), *Educational Science (教育科学)*
- Yu, Y. (2010). The experimental study on the influence of music aesthetic appraisal on the emotion of college students (音乐欣赏对大学生情绪影响的实验研究), *Henan University, China*
- Yuan, J., Chen, J., Yang, J., Ju, E., Norman, G. J., & Ding, N. (2014). Negative mood state enhances the susceptibility to unpleasant events: Neural correlates from a music-primed Emotion Classification Task. *PLoS ONE*, 9(2).
<https://doi.org/10.1371/journal.pone.0089844>
- Zhang, Q. (2011). The domain and importance of studies on musical themes (音乐主题研究的领域及重要性), *Shanghai Conservatory of Music, China*
- Zhang, W. (2008). Study on the influence of music speed and rhythm on mood congruent memory (音乐的速度和节奏对心境一致性记忆的影响研究). *Shaanxi Normal University, China*

Zhou, H. (1999). Aesthetic consideration to modern music (对现代音乐的美学思考). *Music of the People* (10), 13-18

Zuckerkandl, V. (1956). Sound and symbol: music and the external world. *Princeton University Press*