Music and the Teenage Mind:
The Effect of Music on Adolescent Emotions and Behavior

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Abstract

Music is essential to human life. Since ancient times, music has been a core part of human culture. In recent times, music has become integral to the adolescent experience. Specifically, with recent technological advances, music has become pervasive in teenagers' lives. Through music, teenagers express their emotions and beliefs. Because music is becoming more significant in adolescent life, the purpose of this study is to examine the connection between music and the teenage mind.

This research paper investigates music's primary effects on adolescents' emotion and behavior through a survey conducted through Google Forms. Building on prior research on neuroscience and different brain parts behind music processing and its influence on emotion as well as the relationship between music and behavior, as different music genres can encourage different behaviors, the current study examines music's impact on mental health. A survey was conducted to investigate the relationship between different genres and emotions in adolescents. Results showed that genres such as classical and pop music had positive influences on adolescent emotions, while rap and rock music often had the opposite impact. Results also showed that regardless of genre, music evokes feelings of nostalgia. This paper broadens the knowledge of music's effects on adolescents while providing information for using music to improve adolescent behavior. Findings can be used to apply music to find better mental health solutions and promote positive adolescent behavior.

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Introduction

Music is crucial to the human experience and has always been prevalent in human life, dating back to ancient times, as it is the most unique form of self-expression. Some of the first evidence of humans and music dates back about 40,000 years. In the Stone Age, humans carved flutes into mammoth ivory and bird wing bones (Conard, 2009). When making music, humans convey emotions, thoughts, and feelings without using words (Vuust et al., 2022). When listening to music, a broad array of feelings and emotions, such as happiness, sadness, surprise, and nostalgia, can be drawn out (Vuust et al., 2022). Given its history, it is apparent that music has a notable impact on human life.

In the past two decades, music has become particularly significant in adolescents' lives; it is now ubiquitous (Carboni, 2014). Technology has improved and made music accessible with minimal effort (Carboni, 2014). According to the 2019 Common Sense Census, 82% of teens listen to music daily (Rideout & Robb, 2019). As music becomes increasingly significant in teenagers' lives, one might wonder about its effects on teenage brain and behavior.

Music has a direct influence on the human brain. Research has found that music appeals to humans because it indicates a response in the brain's dopamine pathway (Bowling, 2023). This shows that music is neurologically linked to eliciting contentment and delectation. In addition, studies show that music can be used as an emotional contagion, summoning an emotion through mirroring and mimicking (Koelsch, 2015). For example, music with large pitch variations and a faster tempo is often associated with joy. The body then mimics this expression, evoking joy (Koelsch, 2015). Given music's effect on emotions, it would be logical to consider the influence music could have on adolescents, who often listen to music. Hence, it is important to explore the psychology and neuroscience of music and its influence on emotion.

Because of music's influence on the brain and emotions, music can also influence behavior. For example, music genres have been shown to significantly differ in relation to alcohol or illicit drug use (Chen, 2006). Specifically, listening to rap music is linked to recurrent alcohol and marijuana use (Chen, 2006). In contrast, listening to world music does not have the same association, and is not connected to continual marijuana use (Chen, 2006). In other words, music has a strong association with behavior. Thus, studying the relationship between music and behavior may support identifying solutions to improve and promote productive adolescent behavior.

Lastly, it is vital to explore music's impact on mental health. Due to its emotional influences, music can perhaps impact the mind and one's affect. For example, research indicates that music can improve a patient's symptoms and mental state by using music therapy alongside standard care (McCaffrey, 2011). These findings suggest that music can improve mental health, subsequently enhancing teenage behavior.

Given these findings, it is crucial to understand the effect of music on adolescents' behavior. Adolescence is a critical period for finding oneself (Van Oosten, 2015). Thus, it is essential to understand music's implications on adolescents during that vital time. To do so, this paper will address the link between music and the teenage mind. At the same time, it aims to explain how music can improve mental health and promote positive adolescent behavior.

Psychology of Music

Introduction

Studying the psychology of music is crucial, as music can significantly impact adolescents' emotions and moods. Furthermore, to understand which music-related solutions are best for improving teen health, it is key to understand the neuroscience of perceiving music and the personality traits that correlate with specific musical tastes.

Biology/Neuroscience of Music

There are complex neurological underpinnings behind our perception of music. The brain's ability to perceive music and sound requires the synergistic teamwork of various regions. Studies have shown that when perceiving music, the first step is for the brain to interpret acoustic information (Koelsch, 2011). This means that sound must first be received through the ear mechanisms before going into our brain. In the cochlea, acoustic information is transduced into neural energy, which is sequentially modified in the auditory brainstem (Koelsch, 2011). The mechanical energy of the sound is transformed into electrical energy that the brain can then understand. The thalamus, specifically the medial geniculate body, further moves that neural energy to the primary auditory cortex and the adjacent secondary auditory fields (Koelsch, 2011). The auditory cortices are responsible for the majority of the sound processing that occurs in the brain (Vuust et al., 2022). The primary auditory cortex and the adjacent secondary auditory fields then break the acoustic information into a more precise and specified interpretation (Koelsch, 2011). Thus, the perception of music begins with the neurological process of translating sound into a neural language, highlighting a crucial piece of understanding the intricate neurological bases behind listening to music. Furthermore, research indicates various other regions of the brain, such as the cerebellum, basal ganglia, hypothalamus, and amygdala, are utilized in music processing (Vuust et al, 2022). For example, the cerebellum is responsible for balance and locomotion (Mortion & Bastian, 2004). This illustrates these brain networks are used for processing music, such as movement, and emotion are linked to perceiving music. Thus, revealing music can impact numerous functions of the body as these brain networks control different areas of the body. With the help of all these vital networks, music can influence the brain and has the potential to affect behavioral traits and mental health in adolescents.

Moreover, among the million different sounds in the world, how does the brain differentiate sounds from one another? It is through the perception of a musical note's pitch and its timbre (Vuust et al, 2022). When a musical note is played, not only is one frequency released, but various others too. The fundamental frequency of the note is known as pitch, and the other frequencies released produce the note's tonal quality, which is its timbre and is special to one instrument (Vuust et al, 2022). Pitch can be thought of as the foundation of creating music. Depending on the different patterns and presentation of pitch, different sounds are produced. (Stewart et al., 2006). That is, a piano's timbre would be different from a guitar's timbre or the timbre of a human voice. Moreover, pitch is perceived in the auditory cortices and

is distinguished into two parts: translating pitch height, the highness or lowness of a tone, and pitch chroma, the difference between tones in the same octave (Vuust et al, 2022). In other words, when perceiving a musical note's pitch, the brain processes what octave the note is in and which specific note it is. In summary, varying sounds and music can be perceived as different due to every note's distinctive pitch and every instrument's unique timbre. Music mainly comprises three components: melody, the pattern of different pitched tones, harmony, the collection of musical notes to create chords, and rhythm (the timing pattern) (Vuust et al, 2022). The brain understands these constituents through processing pitch. Once musical pitches are recognized, the brain organizes these pitches into melodies, harmonies, and rhythms based on pitch and timing, respectively (Stewart et al., 2006). This demonstrates a key part of understanding the biological foundations of perceiving music, as melody, harmony, and rhythm are the building blocks of all music. The evidence for music perception displays the basis for how music can potentially impact adolescents.

Music and Emotion

Music has an intricate and fascinating connection to human emotions. First, the limbic system, which manages emotional responses (Sokolowksi & Corbin, 2012), is heavily linked to music-evoked responses. . Human research has shown that the superficial amygdala is sensitive to music-evoked joy (Koelsch, 2008). The amygdala is responsible for processing our emotions and is the driving force behind our emotional responses. When listening to music, we may feel joy because of our amygdala's reaction. The neurological bases provided also suggest the reason music may appeal to humans is because the amygdala evokes such strong emotions when listening to music, which can range from joyful to sad emotions. When listening to music, the amygdala also evokes real emotional responses (Koelsch, 2009). This further demonstrates the major emotion-processing center of the brain is very sensitive to music as it creates affective reactions. Overall, these emotional responses can be feelings teenagers yearn for, such as happiness or angst, explaining why listening to music is favorable among adolescents.

When listening to pleasurable music, not only is the amygdala involved, but also other brain parts such as the ventral striatum and orbitofrontal cortex (Stewart et al., 2006). Stated differently, the amygdala is not the only processor of music-induced feelings, other parts of the brain are also involved. This reflects the idea that listening to music is a whole experience and affects different brain parts. In addition, studies have revealed that the laterobasal amygdala interprets the positive or negative reward value of music because when pleasant or sorrowful music is played, activity changes occur in the right laterobasal amygdala (Koelsch, 2008). This means that the amygdala plays a role in determining whether or not a song is pleasurable, explaining why teenagers may or may not like certain music genres. If one listens to a song and the laterobasal amygdala associates that song with a negative value, then one will dislike that song and similar ones.

Similarly, music can also evoke pleasure and activate reward pathways. In particular, studies have shown that the nucleus accumbens, a component of the limbic system, is activated when feeling strong music-induced pleasure (Koelsch, 2008). These moments usually consist of shivers or goosebumps (Koelsch, 2008). This demonstrates that the nucleus accumbens is neurally linked to music's evocative power to bring about pleasure. When music activates this response, it can create a pleasure teenagers look upon favorably. Research also shows that the brain activity seen during music-induced chills is similar to the activity witnessed during euphoria

and pleasurable emotions (Blood & Zatorre, 2001). Moments of highly pleasurable music listening often results in physical responses, such as chills. These chills are linked to having the same brain responses as one would experience during euphoria. This means the brain can strongly influence pleasure, suggesting why music is enjoyable. Furthermore, research has found that music interests humans because it indicates a response in the mesolimbic dopamine pathway between the ventral tegmental area (VTA) and the nucleus accumbens (NAc) (Bowling, 2023). That is, music invokes dopamine, the neurotransmitter that releases feelings of pleasure and satisfaction. This is important because it shows music is neurologically linked to the neurotransmitter that elicits contentment and fulfillment.

Sorrowful music also strongly relates to human emotions, as it can induce a broad spectrum of feelings. For example, studies have shown that listening to unfamiliar sad songs can evoke genuine feelings of melancholy (Vuoskoski, 2012). Said differently, when teenagers listen to sad music, they might begin to feel sad themselves. However, research also indicates that although sorrowful music mainly evokes sad feelings, it can also evoke other complicated emotions like nostalgia, tranquility, and awe (Vuoskoski et al., 2012). This demonstrates that sad music can have numerous effects, not just melancholy. By understanding the psychological bases of music emotions, music significantly influences adolescent emotions and likely their behavior.

Music and Mood

One reason music might be alluring to adolescents is music's influence on mood. Moods are less intense and last longer than emotions (Beetie et al., 2005). Research has found that different music genres may influence mental clarity and tense feelings (McCraty, 1998). For instance, studies reveal that after listening to grunge rock music, adolescents experienced a particular reduction in physical health, mental clarity, and relaxation while also feeling a notable rise in hostility and tension (McCraty, 1998). After listening to grunge rock, there is a significant chance one will experience an increase in aggression and a decrease in vigor. While searching for teen mental health solutions, it is crucial to keep this in mind, as listening to certain music can negatively affect one's health. Additionally, research has shown that after listening to designer music (i.e., music designed to evoke numerous feelings in the listener), adolescents feel a remarkable decrease in sorrow and an immense increase in tranquility (McCraty et al., 1996). This means designer music can positively impact teenage mood because it lessens sadness and induces serene feelings. This suggests designer music can calm teenagers down and de-escalate situations. Research also exhibits that the majority of individuals believe that music can be used to manage sorrow due to its refreshing and cheerful attributes (Ahmad & Rana, 2015). Music with upbeat characteristics is believed to help individuals manage depressing feelings because it can evoke happy emotions. This means that many teenagers view music as a tool to manage melancholic feelings, simultaneously, demonstrating music is believed to have a strong hold over one's moods. Ultimately, it is apparent that music can have various impacts on mood, suggesting music can influence adolescents' mental health and behavior.

Music and Personality

Are adolescents more likely to experience different music-induced emotions and moods due to their music taste? The answer may be yes, as personality and temperament can play a role in music taste. For example, one can consider the Big Five Model, a human personality theory that uses five factors; one factor is Conscientiousness, which refers to how organized one is, and another factor is Openness, which regards how curious one is (De Raad & Mlacic, 2015). Studies that use the Big Five Model reveal that teens who prefer rock music are inclined to score low on Conscientiousness and high on Openness (Delsing, 2008). Accordingly, adolescents who prefer to listen to rock music are usually less orderly and responsible but are also usually more imaginative. In contrast, teens who favor hip-hop, soul, or dance music gravitate towards high scores on Agreeableness (Delsing, 2008), referring to one's tendency to be socially harmonic (De Raad & Mlacic, 2015). Therefore, adolescents who favor listening to hip-hop, soul, or dance music tend to be considerate and kind. Further, using music as a mood regulator is linked to being high in Neuroticism (Chamorro-Premuzic & Furnham, 2007), one's likelihood to possess unsettling thoughts and feelings (De Raad & Mlacic, 2015). Using music as a mood regulator also refers to utilizing happy music when you are joyful, and sad music when you are upset. This shows that adolescents who tend to feel unnerving emotions and think disturbing thoughts tend to use specific music genres when the music correlates with their mood.

Moreover, temperament and personality can also influence one's musical tastes. One's self-image might play a role in forming one's music preference. For instance, one study shows that individuals who see themselves as athletic prefer energizing and rebellious music while individuals who view themselves as conservative favor positive and simple music (Rentfrow & Gosling, 2003). This means that individuals who tend to be active are into hyped-up, rebellious music. This implies that adolescent athletes would favor listening to intense and non-conforming songs, further illustrating that an adolescent's interests and personality can sway their musical tastes as our self-image is a central aspect of our personality. Further, there is a link between listeners who tend to be social and talkative and listening to energetic and rhythmic music (Zweigenhaft, 2008). This demonstrates an individual's bubbly and outgoing personality can influence their interest in vibrant music. Lively and high-spirited teenagers are likely to enjoy dance, funk, or pop music, due to those music genres' rhythmic and passionate attributes. All in all, our personalities are strongly associated with music, which may be why music can have varying influences on adolescent behavior traits and emotions.

Music and Behavior

Introduction

Music can have numerous impacts on adolescent behavior. By understanding these influences, we can develop the proper strategies for boosting positive teenage behavior and optimal mental health.

Effects of Different Genres on Risky Behaviors/ Substance Use

In music, many different genres exist, such as pop, country, hip-hop, and classical. Each genre has a different music style, comprising unique tempos and instruments. Interestingly, each

genre has its distinct impact on our behavior. Some music genres are associated with negative influences on teenage behavior. For instance, frequent listening to rap music is associated with higher chances of marijuana, drug, and alcohol use (Chen, 2006). This shows that different music genres are associated with different adolescent risky behaviors (i.e., behaviors that can potentially lead to negative consequences, such as drugs). Teens who recurrently listen to rap music have a higher chance of becoming substance users (Chen, 2006). Studies have also shown that listening to rave music is linked to an increased chance of using illegal substances (Forsynth, 1997). This means that similar to rap music, rave music can suggest risky behavior, as rave music listeners also have a higher chance of being frequent alcohol and drug users. All the above information demonstrates that specific music genres are associated with negative influences on teenage behavior, making it essential to understand the best way to boost positive adolescent behavior.

It is crucial to consider the effects of different music genres on adolescent behavior. Understanding the potential influences of genres like the ones mentioned above sets the ground for creating the best plan to encourage positive teenage behavior and mental health.

Music and Executive Functioning

A crucial part of music's influence on adolescent behavior is music's impact on teenage executive functioning. Different genres have the potential to positively or negatively affect the cognitive skills of adolescents. One study asked participants to listen to jazz and hip-hop music before memorizing cards. Jazz listeners remembered more cards than the hip-hop listeners and listening to jazz had even improved the number of cards initially remembered (Chen, 2018). Additionally, executive functioning refers to skills needed for problem-solving, decision-making, and working memory (Suchy, 2009). This means that music, such as jazz and hip-hop, can impact teenagers' working memory in constructive or harmful ways. Music can also impact the ability to switch between different tasks performed throughout the day. One study illustrates that music therapy can initiate a great rise in mental flexibility, which is the ability to easily adjust to a new task (Thaut et al., 2009). This implies music can make shifting between different tasks easier for adolescents; this is crucial in scenarios like studying for academic exams or playing a sport. All in all, the evidence mentioned above illustrates that music strongly influences executive functioning.

Interestingly, beyond different genres, the mode and tempo of a song can also influence one's executive functioning. The mode of a song determines whether it is major or minor (Peretz et al., 1998). A major mode would result in a happy song, while a minor mode would ensue a sad song. Studies show that the tempo and mode of music can affect executive functioning as different modes and tempos can induce high or low arousal (Zhou, 2022). A fast tempo and happy mode might raise arousal levels while a slow and sad mode might decrease arousal levels. Our level of arousal can often impact our ability to make choices, making the type of songs we listen to crucial. Specifically, happy songs can affect decision-making, as major modes can evoke high-arousal emotions that influence listeners to choose quick but small rewards (Zhou, 2022). This exhibits that when listening to happy songs, people are more likely to choose swift, small rewards over long-waiting, larger rewards. Moreover, research demonstrates that classical music can also influence decision-making because after listening to classical music, individuals experience a positive rise in the inclination to spend more money (Steffens, 2018). Teenagers who enjoy listening to classical music have a higher chance of being higher

spenders. This leads one to wonder about the implications of adolescents listening to different genres and types of music, simultaneously suggesting that the type of music an adolescent listens to is associated with positive and negative decision-making.

Some music genres, such as classical music, may have soothing effects and can impact certain higher-order thinking patterns. Research has shown that teenagers who listen to classical music enjoy its calming attributes and ability to serve as a time to pause, recollect, and organize thoughts, precisely problems (Ruscanda, 2015). When teenagers have time to recollect their thoughts, they think clearly. Thus, classical music can encourage positive, safer, and more productive behavior in adolescents.

Influence of Music on Aggression

Music may have a large influence on adolescent aggression. Research has shown that the type of music one listens to relates to our attitudes toward violence, as individuals who listen to prosocial music view violence, such as war and crime, unfavorably (Greitemeyer, 2011). Another way to say this is that music with positive, optimistic, and beneficial lyrics can negatively change an individual's views and attitudes toward violence. This information shows that listening to prosocial music is associated with lower aggression levels, as one would be against fighting or war. The opposite goes for negative lyrics. For example, one study reveals a significant rise in male hostility toward females after listening to two songs with misogynistic lyrics (Fischer, 2006). This demonstrates listening to music with hateful lyrics can change the way we view one another and violence. This suggests that music with misogynistic lyrics can be dangerous for teenagers. While listening to prosocial music can have positive benefits, listening to certain negative lyrics can have bad consequences.

Furthermore, other forms of music can also affect one's general aggressiveness. Studies demonstrate that frequently listening to rap music strongly predicts aggressive behavior, while recurrent listening to rock music has the opposite effect (Chen, 2006). This means that listening to rap music increases one's chances of being hostile and aggressive, but listening to rock music decreases the chances of being aggressive. In addition, this also means that adolescents who listen to rap music may be more aggressive. Considering all of the evidence above, to encourage productive adolescent behavior, adolescents should avoid music with hateful lyrics and opt for productive, favorable, and kind lyrics.

Music and Substance Use

Some musical genres are also commonly associated with substance use. For instance, this connection is seen in a study by Meng-Jinn Chen (2006), who found that listening to rap music is linked to regular alcohol and illicit drug use, as listening to rap music often heavily predicts the use of these substances. In other words, indulging in rap music is frequently linked to using marijuana or drinking more alcohol. More research also supports this idea by demonstrating rap is positively related to smoking and tobacco use (Mulder, 2009). This reinforces the notion that listening to rap music as an adolescent is dangerous because it is a significant predictor of substance use. Accordingly, as mentioned above, rave music may affect adolescent behavior in a similar way as research reveals that listening to rave music is associated with a rise in the later potential use of illegal substances (Forsynth, 1997). Moreover, classical and pop music is negatively linked with substance use, such as smoking, drinking, and

tobacco (Mulder, 2009). This shows that classical and pop music listeners are less likely to indulge in drugs. As demonstrated above, some music genres are adversely linked to substance use, while others are not. How is that possible? Research indicates that music is related to substance use, as some music can evoke substance craving based on a listeners' past experiences with the music (Silverman et al., 2023). This shows that music can evoke music-induced drug cravings in adolescents because some individuals associate specific songs with experiences of substance use. The same study demonstrates that music often has lyrics portraying drugs (Silverman et al., 2023). Music with lyrics mentioning drugs can be alluring to listeners, drawing them in to want to try drugs and experience what the song is trying to convey. Teenagers may fall victim to this, so it is vital to keep in mind what songs do not induce substance longings or predict substance use.

Music and Mental Health

Introduction

Music therapy can have a significant favorable influence on teenage mental health. It is crucial to explore the relationship between music and mental health as it can suggest new strategies for improving teenage mental health.

Effect of Music on Different Mental Health Conditions

Certain types of music can alleviate symptoms of depression, anxiety, and substance use. First, music may have the potential to lessen depressive symptoms. For example, studies have found that stroke patients who listen to music for at least one hour per day notably self-report less depression than individuals in standard medical care (Bowling, 2023). This suggests that music could potentially be beneficial to adolescents struggling with depression, as listening to it for over one hour daily could potentially relieve depressive symptoms. In addition, music may also help individuals fight anxiety as a study has found that music therapy has the power to ease generalized anxiety disorder symptoms (Gutierrez & Camarena, 2015). This illustrates that music may be beneficial to adolescents struggling with anxiety and help with daily life and coping mechanisms. Furthermore, music can also improve substance use cravings. Research indicates that songs can alleviate substance use cravings if the listener associates that specific song with abstinence (Hohmann et al., 2017). Put differently, an individual's personal familiarity with a song can decrease drug cravings. This means that music can be helpful to those battling substance misuse. If a teenager is experiencing substance use cravings, they can use certain songs they associate with sobriety to relieve those longings. When searching for substance use help, music is a viable option. Thus, with all the given information, music can have a significant role in easing depression, anxiety, and substance use.

Impact of Different Tempos, Rhythms, and Genres

Music is powerful in mental health because different rhythms, tempos, and genres may influence emotional and psychological states. For example, groove, the degree to which musical rhythm inspires movement in its listeners, is strongly associated with an optimistic mood (Bowling, 2023). This shows that rhythm can impact an individual's mental health by influencing their emotional state. Moreover, this is possible because the groove of a song can significantly disrupt brain patterns linked to depressive symptoms (Bowling, 2023). Put differently, the rhythm

of a song can interrupt negative brain cycles, which positively impacts our affect. Therefore, a song's rhythm is essential to mental health because the right rhythms can significantly help adolescents struggling with mental health. Additionally, the tempo of a song can also affect our emotional and psychological states. Tempo is notably associated with music-related relaxation because music with a slower tempo induces calmness and slower heart rates in listeners (De Witte et al., 2022). This demonstrates that tempo influences our mental health by creating physiological changes. This implies that tempo could be used to calm teenagers struggling with anxiety or stress, showcasing the importance of musical tempo. With the help of a song's rhythm and tempo, music can potentially impact the mental health and behavior of adolescents.

Different music genres may also impact our mental and emotional states. As mentioned above, varying music genres can influence psychological clarity (McCraty, 1998). This means that certain songs can impact a person's decision-making and judgment. Specifically, listening to grunge rock music can lead to a decrease in mental clarity and relaxation (McCraty, 1998). In other words, grunge rock music has the potential to negatively influence a teenager's psychological state by clouding judgment and increasing stress. This suggests that grunge rock music could be dangerous to an adolescent's mental health. Other music genres may also influence teenage mental health. For instance, sad songs can potentially evoke genuine feelings of melancholy in listeners (Vuoskoski, 2012). This means that listening to sad music is linked to negative affect and can draw out depressed feelings in adolescents. Considering the impacts of different music genres on mental state, it is clear music has a significant influence on adolescent behavior.

Music Therapy

Music therapy positively harnesses music's impact on adolescents. Music therapy is the controlled use of music's influence on the human body to support a patient's physiological, psychological, and emotional integration while treating illness or disability (Munro & Mount, 1978). This means that music therapy utilizes music's various influences on the human body to aid patients and ease the path to recovery. Music is a key part of assisting patients through recovery because of its integrative powers (Gallagher, 2011). As mentioned previously, when listening to music, one may feel it throughout their entire body. Music induces physical, emotional, and psychological responses in the human body (Murrock & Higgins, 2009). Therefore, music is beneficial when helping individuals. Also, through music therapy, individuals and the therapist work through music interventions to achieve personalized goals, such as coping mechanisms and self-confidence (Murrock, 2016). This demonstrates how music therapy utilizes music's effects on mental, physical, and emotional states to help patients accomplish individualized goals. With the efficient use of music therapy, music can promote positive mental health in adolescents.

There are a few common techniques used in music therapy, such as improvisation and composition. First, improvisation can be done by the therapist and/or patient and is the spontaneous use of music that utilizes a spectrum of tuned and untuned instruments and voices to preserve or improve health (Bruscia, 1987). In other words, the patient uses various musical sounds with varying tempos and pitches to explore themselves and create music that improves or maintains their condition.. Improvisation also aims to aid the patient in developing stronger

intrapersonal skills, such as awareness of themself, insight, and self-expression (Meadows & Wimpenny, 2017). Intrapersonal skills are skills relating to how well we understand and express ourselves. Through improvisation, patients can experience improved self-consciousness and stronger ways to express that newfound self-awareness (Meadows & Wimpen. Additionally, compositional music therapy involves the therapist guiding the patient through writing new lyrics and/or melodies (Ishak et al., 2024). This means that compositional music therapy advises a patient to create new, original music. The compositional technique strengthens self-awareness regarding one's behaviors, thoughts, and feelings (Ishak et al., 2024). Similar to improvisation, individuals also feel increased introspection after compositional musical therapy. Therefore, compositional and improvisational music therapy may be significant in helping adolescents struggling with their self-esteem and highlights music's potential impact on adolescent behavior.

Music therapy has shown to be effective in alleviating various mental health conditions. Studies have found that music therapy, alongside standard care, has aided people with schizophrenia in improving their overall health, psychological state, and social functioning (Kumioka et al., 2014). This illustrates that music therapy can significantly help people struggling with psychiatric issues, as it influences numerous parts of an individual's life, such as their physical health, mental health, and social interactions. Research also indicates that music therapy can have positive impacts on anxiety, mood, and quality of life in people with cancer (Kamioka et al., 2014). Said differently, music therapy is helpful to patients facing difficult health conditions, such as cancer, as it helps ease the road to recovery. Music therapy has also been shown to be successful with people with autism spectrum disorder (Gassner et al., 2022). Research reveals that music therapy can effectively improve social interaction, social-emotional reciprocity, and verbal communicative skills in people with autism spectrum disorder (Gassner et al., 2022). This shows that music therapy can be beneficial for adolescents with autism and enhance their daily life by helping to improve their social skills. In short, music therapy demonstrates the potent influence of music on mental health conditions.

Survey

Introduction

Music can influence teenage emotions in numerous ways. Listening to music has been shown to evoke emotional responses in its listeners and it can draw out emotions such as happiness, sadness, surprise, and nostalgia (Vuust et al., 2022). The current survey aimed to evaluate adolescents' emotional reactions to different music genres. By conducting this survey, I aim to inform future research that could be used for enhancing adolescent behavior in the classroom and improving mental health.

Methods

The survey was conducted through Google Forms. In isolation, participants took the survey on electronic devices like phones or computers. 23 participants were surveyed, ranging in age from 15 to 20, with the average age being 16. It was advertised through social media, such as Instagram, and shared by high school teachers in their classrooms. Participants were

first prompted to provide their baseline emotions. Next, they were asked to listen to a song and rate their emotions, urged to move, and then report their physical reactions after listening. This process was repeated for each song. The songs used for each genre were Lose Yourself by Eminem, released in 2002 and used for the rap genre, Für Elise by Ludwig van Beethoven, which was released in 1867 and used for the classical genre, Back in Black by AC/DC, which was released in 1980 and used for the rock genre, Umbrella by Rihanna was released in 2007 and selected for the pop genre,and Take Me Home, Country Roads by John Denver was released in 1971 was used for the country genre.

Survey Results

Emotion Scores

Figure 1

Emotion Scores

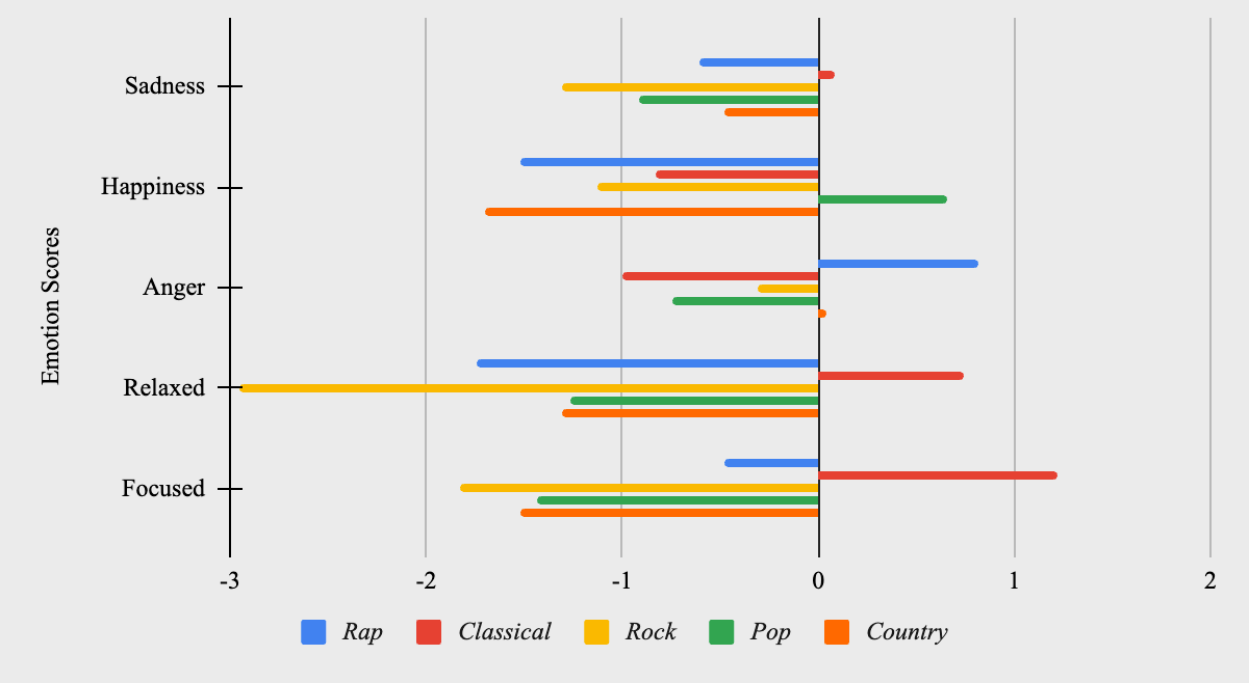


Figure 1 shows the results of varying music genres' impacts on adolescent emotions. Rap demonstrated the most significant changes in happiness and relaxation. After listening to rap music, participants' happiness scores decreased by about 1.5 points. This exhibits how music can impact adolescent emotions, as it suggests rap music can negatively affect a teenager's happiness. Similarly, rap music also lowered relaxation in participants by almost 2 points. This means that rap music can increase tension in adolescents and could be dangerous for promoting positive adolescent mental health.

Figure 1 also demonstrates the influence of classical music on teenage emotion. Classical music's most notable effects are on focus and anger. It increased focus by around 1.25 points and lowered anger by 1 point. This shows that participants felt more focused and at peace after listening to the classical song sample.

The most important differences related to rock music were changes in relaxation and focus. Rock music significantly decreased relaxation and focus. Relaxation went down by almost 3 points after listening to rock music, and focus decreased by around 2.75 points.

Pop music had positive effects on adolescent emotion. Pop music was the only song that improved the happiness of the participants. It lowered sadness by around 0.75 points and increased happiness by almost 0.75.

On the other hand, country music had negative effects on adolescent emotion. Country music lowered happiness scores by 2.75. This means that country music might encourage sad behaviors among adolescents. It also decreased focus by 1.5 points, implying that country music can stimulate negative emotions.

Strong Emotions

The results also displayed numerous strong emotional responses to the different songs. Interestingly, every song evoked a feeling of nostalgia in participants. The majority of responses from the rock, pop, and country songs were associated with high responses of nostalgia. Rap and classical also included numerous nostalgia responses, but not as much as the other three genres.

Specifically, a few participants were irritated after listening to rap music. One response describes feeling "uneasy" because of the rapper's voice and the background bass. The response details that the rapper's voice sounds desperate as if he is trying to tell something to the listener, which contributed to their overall uneasy experience.

Classical music mainly induced feelings of nostalgia. Participants frequently noted being reminded of their younger school years, former high school classes, and fancy restaurants and diners.

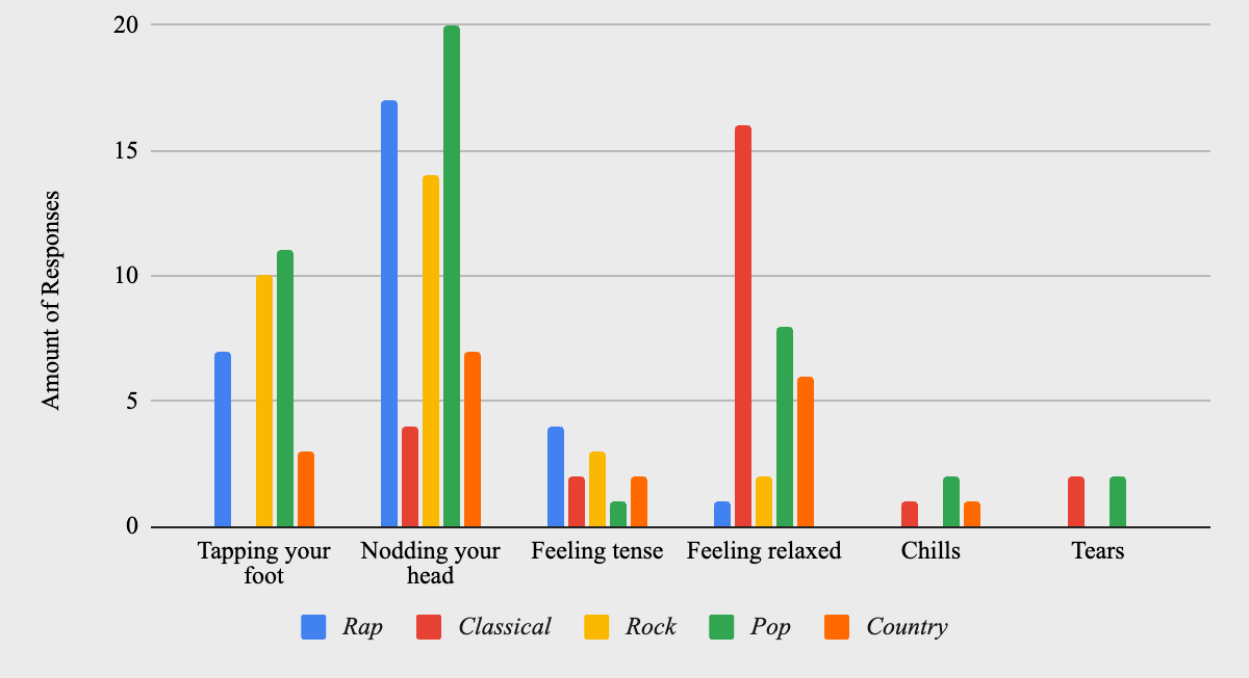
Rock music also had many responses regarding nostalgia. Responses included memories of their dad, their friends, and popular movies. One participant also recorded feeling significantly less relaxed after listening to the rock song.

After listening to pop music, many participants recorded feeling very happy. Participants also wrote about their feelings of nostalgia and the memories that the song evoked. Many memories are of their younger days and pop culture moments. One unique response accounted that the pop song evoked a strong sense of romance.

Finally, country music made many participants feel at peace and evoked nostalgia. Many memories that were recorded regard memories of family members. One participant recorded feeling very frustrated after listening to the country song because they dislike the country genre.

Physical Reactions

Figure 2
Physical Reactions



In Figure 2, participants were asked if they experienced any physical reactions after listening to each song. After listening to rap music, the most common physical reaction was nodding their head. Similarly, nodding your head was the most frequent physical reaction to pop, rock, and country music. The most occurring physical response to classical music was feeling relaxed.

The least common physical reactions were chills and tears. Only classical, pop, and country songs evoked chills in participants and only classical and pop music induced tears. The number of participants who experienced chills or tears was very low.

Mood

Figure 2
Music's Influence on Mood

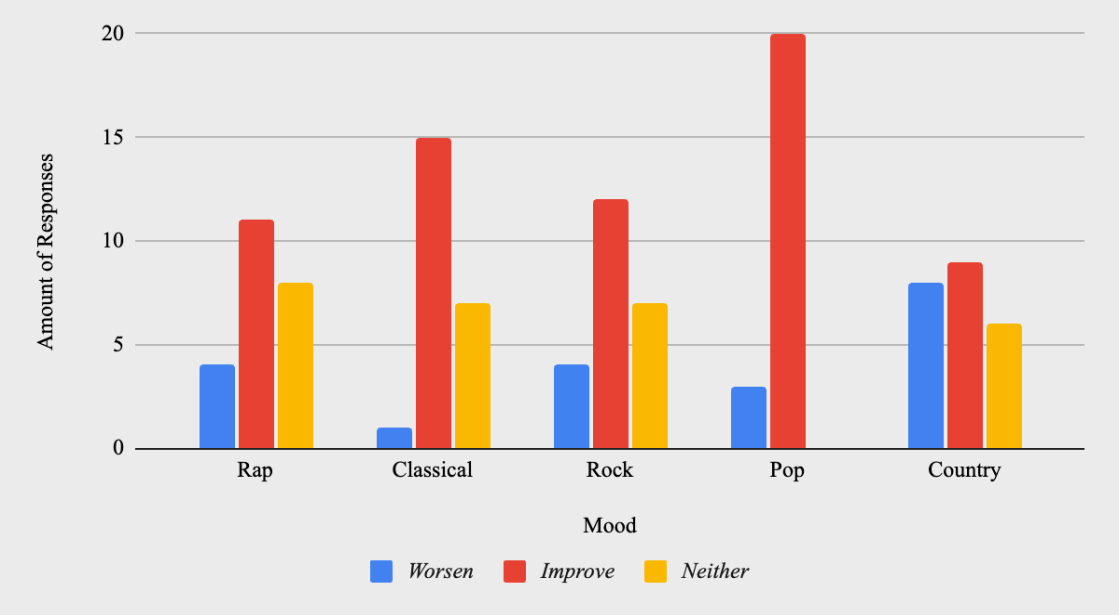


Figure 3 represents each song's influence on the participants' mood. Overall, every song mainly improved the participants' mood. Less than half of the participants recorded that any song worsened their mood.

Rap music mainly improved listeners' moods. Eleven participants recorded that their mood felt higher after listening to rap music, while eight participants recorded that rap music did not affect their mood. Finally, only four participants said that rap music worsened their mood.

Furthermore, classical music's main impact was improving mood. After listening to the classical song, 15 participants noted that their mood improved. Interestingly, only one participant recorded that the song worsened their mood.

Rock music mostly improved the participants' moods, but it also had negative effects for other participants. After listening to the rock song, 12 participants reported their mood improved, 7 participants experienced no change, and 4 participants' moods decreased.

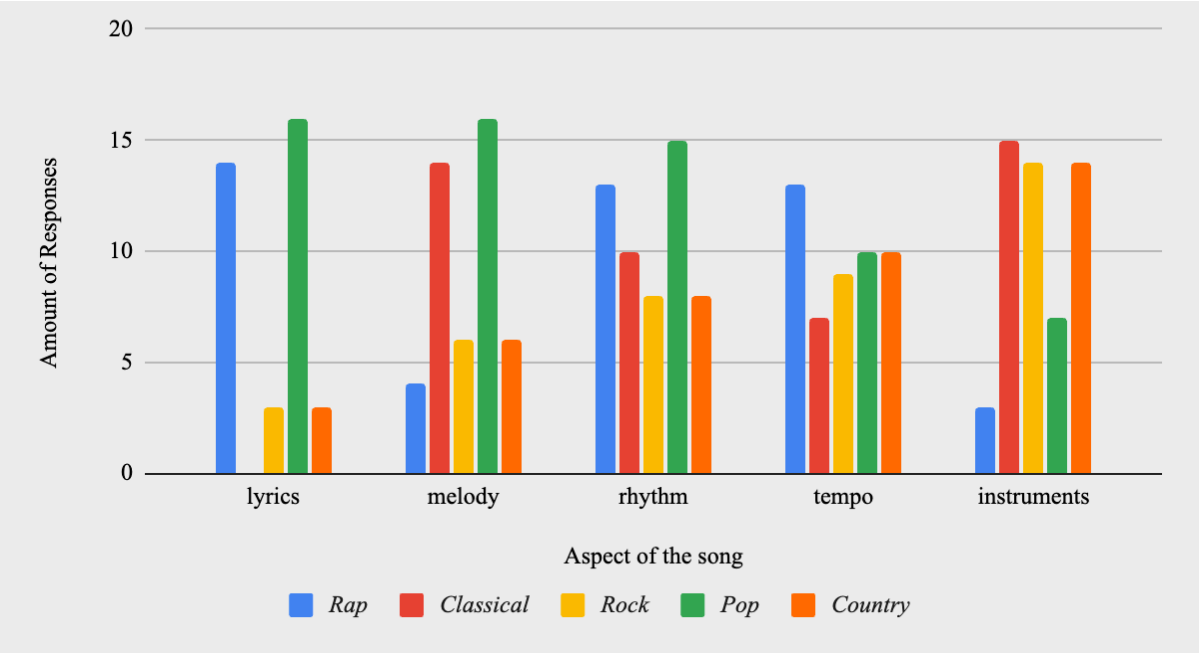
Pop music had a significantly positive effect on participants' moods. Twenty participants recorded that pop music improved their mood, the highest number of improved mood responses out of the five songs. Furthermore, only three participants wrote that it worsened their mood, and zero responses indicated no change in mood.

Country music negatively impacted mood. Of the five songs, country music caused the highest number of worsened mood responses. Eight participants recorded that country music worsened their moods.

Impact of the Song Aspect on Emotion

Figure 4

Aspect of the Song with the Most Impact on Emotions



In Figure 4, every aspect of the song impacted the participants' emotions. The rap song's lyrics, rhythm, and tempo impacted participants. 14 participants said rap lyrics affected them the most, and 13 recorded that the rhythm and tempo impacted them the most.

Classical music's melody and instruments had the most impact on its listeners. Of each aspect, melody and instruments had the highest recorded responses. No participants recorded that lyrics impacted their emotions, as the song had zero lyrics.

Similarly, the instruments used in the rock song most impacted the participants' emotions. The melody, rhythm, and tempo also had an impact, but not as much as the instruments. Furthermore, the rock lyrics had the most minor effect on participants' emotions.

Pop music's lyrics, melody, and rhythm significantly influenced the participants' emotions. Of the five songs, the lyrics and melody of the pop song impacted participants' emotions the most. Pop music's lyrics and melody received the highest responses, indicating that they impacted emotion.

The instruments used in the country song most impacted the participants' emotions. Meanwhile, the lyrics had the least influence.

Discussion

Music can have varying impacts on adolescent emotion and can improve adolescent mood. One important finding from the survey is classical music's effect on teenage emotions. It significantly increased focus and relaxation in adolescents while also lowering anger. This finding suggests that classical music can be used in classroom settings to improve productivity

and serve as a tool to manage stress and emotions. Pop music was also the only song that improved happiness; therefore, it could also be utilized to manage mental health. Rock music may also be dangerous when used inside classrooms. Results indicate that it significantly decreases relaxation and focus. This suggests rock music may be harmful in classrooms as it can encourage being off-task. Its effects on relaxation may also increase stress and pressure on adolescents. All in all, the survey results suggest that different genres can help improve adolescent behavior and manage emotions.

Moreover, one of the most notable findings from the survey was that every song evoked a sense of nostalgia in participants. This suggests that music has been vital in their upbringings, and participants associate each song with different childhood events.

Furthermore, one of the most critical findings from the survey is music's ability to improve mood. Regardless of song genre, the music overall enhanced the participants' mood. This implies that music can be a powerful tool for improving adolescent mental health. Music inside schools may benefit adolescents and help them associate school with positive feelings. Overall, music positively affects adolescents and, when used correctly, may have the ability to improve adolescent behavioral traits and mental health.

One limitation of the survey is its small sample size. The survey only surveyed 23 students who live in a Californian suburban setting. This population may explain why country music was intensely disliked and associated with negative feelings. Had the survey been taken by adolescents from different backgrounds, country music may have had the opposite effect. Moreover, since the survey population was small and not diverse, the results cannot be generalized to all adolescents.

Discussion

Ultimately, many processes happen simultaneously when perceiving music. Individuals translate melody, harmony, and rhythm while concurrently translating a musical note's pitch and timbre (Koelsch, 2011; Vuust et al., 2022). Moreover, music may appeal to adolescents as it can evoke emotional responses because of the amygdala's emotional attributes and connections (Koelsch, 2008). At the same time, music significantly impacts mood, as specific musical genres can increase or decrease relaxation (McCraty, 1998). Music can also be addicting as it can activate the dopamine reward pathway (Bowling, 2023). One's personality can influence music preference (Delsing, 2008). Understanding the critical points of the psychology of music brings many solutions for promoting positive adolescent behavior and improving teen mental health to light.

All in all, adolescent behavior may be significantly associated with music and its different genres. For instance, risky behaviors, such as marijuana, drug, and alcohol use, are linked to frequent listening to rap and rave music (Chen, 2006). Specific music genres can also positively impact adolescent executive functioning. For example, one study found that listening to jazz music helped improve memory (Chen, 2018). The tempo and mode of a song are also related to executive functioning because adolescent arousal changes when listening to various modes and tempos, impacting the teenage ability to make choices (Zhou, 2022). Given that different genres have varying effects on adolescent behavior, specific genres may also have significant impacts

on teenage aggression. Listening to music with optimistic lyrics is associated with low aggression and negative views toward fighting (Greitemeyer, 2011). On the other hand, rap music can increase aggression levels (Chen, 2006). Furthermore, varying music genres also have different effects on adolescents and substance use. As mentioned above, rap is heavily linked to substance use (Mulder, 2009). Conversely, listening to classical and pop music is negatively associated with substance use (Mulder, 2009). With the given information, it is apparent that music can impact adolescent behavior in many ways.

Music therapy can also notably influence adolescents' behaviors. Certain types of music genres can alleviate symptoms of various mental health conditions. For example, listening to music for at least one hour a day can improve depressive symptoms (Bowling, 2023). In addition, different tempos and rhythms can influence emotional and psychological states. Also, music therapy is efficacious in improving different mental health conditions, such as anxiety (Gassner et al., 2022). Music is potentially very beneficial to adolescent mental health and could be used inside classrooms to promote positive behaviors and moods. Future research may be valuable in understanding the effects of music therapy inside classrooms. Ultimately, music therapy reflects the substantial impact music can have on adolescent behavior.

The current study also explored music's emotional effects on adolescents. One of the most notable findings was that every genre evoked feelings of nostalgia. Moreover, participants recorded that classical music significantly increased focus and relaxation. Thus, classical music could be a coping mechanism for dealing with stress. Another interesting finding was that pop music was the only song that improved happiness. Furthermore, the results indicate that rock music significantly decreases relaxation and focus. This suggests rock music may be harmful when used in classrooms. Generally, it was found that varying genres help promote various adolescent behavioral characteristics and mental health. Results from the survey can be used to inform helpful changes in schools, libraries, and recreational areas to boost healthy adolescent behavior.

Strengths and Limitations

The current findings should not be generalized to all adolescents. First, the survey only sampled a small and non-diverse population. There were a few sociocultural biases. For instance, almost all of the responses regarding country music were negative. This may have occurred because of my population's Californian suburban setting. Furthermore, my research mainly consisted of free PubMed or Google Scholar articles. This may have impacted my findings because I could not analyze most existing research on adolescent behavior; opposing research may have been behind paid access. In addition, my research indicated that music is not usually the cause of behavior but is correlated with it. Thus, the impact of music on every adolescent is individual and personalized. However, with the access I did have, I found much research on the influence of music on substance use. I believe my research on the relationship between music and adolescent substance use is solid and generalizable.

Future Directions of Research

Future research areas could investigate music's impact on adolescent motivation and the effects of music in classroom settings. Research on the relationship between music and

adolescent motivation could explore how different types of music influence motivation in varying settings, such as academics or extracurricular activities. Additionally, the link between background music in classroom settings and adolescent behavior could explore how different tempos or volumes of music impact student grades or test performance.

Conclusion

The link between music and psychology is fascinating, from the process of experiencing music to the amygdala's emotional relations. Moreover, music's influence on adolescent behavior is a broad spectrum; varying types of music can have numerous effects on behaviors, such as drug-related and positive behaviors. Music also has a captivating bond with teenage mental health, as different music genres can harm or benefit adolescents' psychological states. By conducting a literature analysis and a survey, I now deeply understand the impacts of music on adolescent behavior and, interestingly, the effect of music on my behavior. Music has an enthralling impact on all of its listeners, including you.

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