Music Interventions in the Treatment of Adolescent Trauma: A Systematic Review

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MUSIC INTERVENTIONS IN THE TREATMENT OF ADOLESCENT TRAUMA:
A SYSTEMATIC REVIEW

A clinical dissertation submitted in partial satisfaction
of the requirements for the degree of
Doctor of Psychology

by
Diana C. Hereld

April, 2022

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This clinical dissertation, written by

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under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

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DEDICATION

For my mother, Dr. Margaret Diana Hereld.

Thank you for the music.
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To the children and families I have learned from over the past few years: Thank you for our time together. Never stop singing.
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ABSTRACT

As multidisciplinary research continues to uncover the promise of non-invasive interventions such as music in mental health treatment, clinicians, researchers, and music scholars alike have increasingly come together through the field of music psychology. As such, it is unsurprising that some of the most significant findings have come from cross-disciplinary studies in music and medicine. The juxtaposition of music and mental health creates a unique and substantial need for integration of literature across multiple disparate settings, including clinical psychology, education, neuroscience, music therapy, behavioral medicine, and psychiatry. Through methodological application of a textual narrative evidence synthesis, this review examines multiple modes of research, from randomized control trials and longitudinal studies to qualitative case material and phenomenological analysis. Psychologists and other mental health professionals will benefit from this review by learning what musical interventions are currently used in practice, for what purposes, and to what outcomes. The primary aim of this systematic review is to examine musical interventions for adolescent trauma survivors. This dissertation explores the following questions: How are clinicians using music with adolescents with histories of trauma? What musical interventions are used to improve affect regulation and other associated symptoms? What are the outcomes of musical interventions for traumatized adolescents?
Chapter 1: Introduction

Since the establishment of the first academic Music Therapy degree program in 1944, the use of music in healing was often considered the domain of music therapists (American Music Therapy Association, 2020). However, there has long been evidence that individual and social musical behavior can play a role in the care of both acute and pervasive illness (von Georgi et al., 2009; Gebhardt et al., 2014; Thompson & Schlaug, 2015). Accordingly, music-based interventions as adjunctive treatments have been integrated across primary and mental health care settings such as surgical aftercare, cognitive rehabilitation, school-based therapy, psychiatric inpatient health, and psychological practice (Kim & Stegemann, 2016; Langdon et al., 2018; Porges & Rossetti, 2018; Thompson & Olsen, 2021). Despite music’s evidence as a valuable intervention, there remains a paucity of consensus about what types of populations, treatment settings, discrete musical activities, and types of music make for an effective treatment tool (Uhlig et al., 2017; McFerran et al., 2020). There is less clarity on the particular mechanisms that maximize efficacy in delivery and patient utilization – especially in the treatment of adolescent trauma.

Complex developmental trauma represents an even greater diagnostic and conceptual challenge: Despite the proposal to include complex trauma in the Diagnostic and Statistical Manual of Mental Disorders (DSM) for over two decades, it remains unrepresented in the DSM-5 (Sar, 2011). This presents a number of challenges for practitioners both in research and in working with traumatized populations (Van der Kolk, 2017). However, modalities such as Trauma-Focused Cognitive Behavioral Therapy (TF-CBT), which at times incorporates music in the narrative component, have
shown success in the treatment of several types of child and adolescent trauma, including complex trauma (Cohen et al., 2012). Furthermore, trauma-informed musical interventions are garnering increasing attention and use by individuals and communities (Garrido et al., 2015; Malchiodi, 2020). For the purposes of this project, complex trauma (described in detail below) involves the types of interpersonal, developmental, and/or recurrent traumatic experiences which most often occur during the course of early childhood through adolescence.

Multiple frameworks suggest the research base for music in clinical practice needs attention (Robb et al., 2011, Uhlig et al., 2017). Beyond the many ways the mental health field’s understanding and conceptualization of trauma has evolved over the past few decades, the same is true for arts-based interventions. Integration is especially needed across existing research in music and psychology theory and practice (Golden et al., 2021). There is a further need for examination of studies based on rigorous, replicable methodology versus those of which are less empirically based. Given its often anecdotal nature, much research in music therapy lacks strong empirical methodology for reported outcomes. Studies performed in medical and psychological settings internationally are increasingly finding and replicating evidence showing that both adolescents and adults successfully use music for the purposes of affect regulation, demonstrated through decreased negative emotions, self-injurious behavior, and problematic relational functioning (Wooten, 1992; Romer et al., 2010; Gebhardt et al., 2014; Saarikallio et al., 2017; Gebhardt & von Georgi, 2018; Gebhardt & von Georgi, 2019).
A number of professional practice issues similarly demonstrate the need for a comprehensive examination of the literature: As traditional music therapy is often not covered by insurance nor is it widely available, sufficient funding for executing rigorous studies may be less likely awarded (Kern & Tague, 2017; McFerran, 2020). Further, as music therapists may practice with only a bachelor’s degree of Music Therapy (typically four years of college education) and board-certification (American Music Therapy Association, 2020), they may not receive extensive training in risk assessment (Kern & Tague, 2017). As such, doctoral-level clinicians and other licensed medical and mental health specialists remain better prepared for the primary health treatment of sensitive, high-need populations. Recent meta-analyses and systematic reviews of randomized controlled trials (RCTs) have found Music Medicine (defined by Kamioka et al. as the use of passive music listening implemented by medical personnel) may be used without intensive training or materials as a cost effective adjunctive treatment to primary care for the purposes of promoting relaxation in improving sleep quality, reducing pre, peri, and postoperative anxiety and improving heart rate, respiratory rate, and blood pressure (Dileo et al., 2006; De Neit, 2009; Kamioka et al., 2014). A 2016 systematic review investigating the use and efficacy of music listening as an intervention for children and adolescents in clinical and non-clinical settings similarly found music listening in health care contexts to be a feasible and cost-effective intervention (Kim & Stegemann, 2016). Furthermore, much research regarding the informal social and personal use of music in everyday life (UofM) has highlighted its utility and benefits on mood, cognition, emotion, and overall well-being (DeNora, 2004; von Georgi et al., 2006; Gebhardt & von Georgi, 2019; von Goethem & Sloboda, 2011). Accordingly, the implementation of musical
interventions should not be confined to the practice of music therapy. A systematic review of what types of music interventions are being used to what ends would engender mental and medical health professionals equipped to treat complex, sensitive, and high-risk diagnoses to understand the ways to draw upon the positive benefits of music in the treatment of adolescent trauma.

Commonly suggested directions for future research indicate this area of study requires attention (Golden et al., 2021). It is often speculated that due to the ‘in-person’ nature of musicking (Small, 1988) together during music therapy, the effects may not endure outside of sessions when access or motivation to engage in playing a musical instrument or singing is lost. However, the teaching and implementing of music-listening as affect-regulation can and may reflect outcomes similar to that of simple coping skills in manualized treatments. When the patient is able to engage in musical behavior on their own, particularly in times of crisis as opposed to limited music therapy or clinical/laboratory settings, they are more likely to show longitudinal positive effects (Gebhardt et al., 2017). The COVID pandemic has further highlighted the value of exploring non-traditional interventions and coping skills that can be employed remotely and used independently.

This systematic review aims to provide evidence for school and healthcare practitioners, clinicians, and researchers, ultimately impacting the ways psychologists and other mental health professionals use music clinically for adolescent trauma as well as informing directions for future research.
Adolescents and Trauma

The World Health Organization (WHO) defines adolescence as any person between the ages of 10 and 19 (Csikszentmihalyi, 2019). This age range occurs within the WHO’s designation of “young people,” referring to anyone between the ages of 10 and 24. For the purposes of this project, “adolescence” will include individuals between the ages of 10 and 18.

The general clinical needs and challenges of adolescents have changed significantly over the past decade (Patalay & Gage, 2019). Growing visibility and awareness of diversity in gender and sexuality and resultant stigma and discrimination, mounting pressures in the context of social media and civil unrest, and widespread awareness of school-based trauma such as gun violence, structural racism and inequity, and other challenges are likely contributors to the increased number of adolescents are presenting with depression, self-harm, and other mental health concerns (Keyes et al., 2019; Patalay & Gage, 2019; Scrine, 2021). Van der Kolk (2005) has argued childhood trauma may be the single most important issue in public health in the United States. Adolescents with direct or indirect interpersonal, complex, or single-incident trauma exposure continue in prevalence based on the increase of school shootings, under-resourced schools, and staggeringly high rate of childhood poverty and mass incarceration of racially marginalized youth and their patents in the United States (Bureau, 2021). These effects may be seen clinically in diagnoses and medication referrals tied to behavioral dysregulation, as well as attempted or completed suicides. The number of suicide deaths in ages 15-24 in 2017 became the highest ever on record and suicide remains the second leading cause of death in ages 10-34.
(Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 2019). Despite the growth in both self-destructive behavior and school-age trauma exposure, there have often been comparably few school or community resources to address their long-term effects. Researchers and practitioners have accordingly begun expanding efforts to explore new methods of disseminating treatment interventions across multiple settings, including schools and primary care (O’Callaghan et al., 2007; Foran, 2009; Kim & Stegemann, 2016; McFerran et al., 2018).

**Psychological Trauma**

The behavioral health field’s conceptualization of psychological trauma has also evolved (Briere & Scott, 2015). Since the addition of posttraumatic stress disorder (PTSD) to the DSM-III in 1980, it has developed gradually from an anxiety disorder to where it currently falls within the DSM-5’s larger umbrella of trauma- and stress-related disorders. The DSM-5 defines PTSD as consisting of four distinct diagnostic behavioral clusters: intrusion (re-experiencing elements related to the trauma), avoidance, negative alterations in cognitions and mood, and marked changes in arousal and reactivity associated with the traumatic event(s) (American Psychiatric Association, 2013). The final cluster ties directly to one of the largest overarching features that manifests across mental illness: challenges in the ability to effectively modulate one’s emotions.

The DSM-5 additionally draws a clearer line in what it defines as constituting a traumatic event, for example now including sexual assault and recurring exposure often experienced by law enforcement and first responders. Criterion A states:

Exposure to actual or threatened death, serious injury, or sexual violence in one (or more) of the following ways:
1. Directly experiencing the traumatic event(s).

2. Witnessing, in person, the event(s) as it occurred to others.

3. Learning that the traumatic event(s) occurred to a close family member or close friend. In cases of actual or threatened death of a family member or friend, the event(s) must have been violent or accidental.

4. Experiencing repeated or extreme exposure to aversive details of the traumatic event(s) (e.g., first responders collecting human remains: police officers repeatedly exposed to details of child abuse) (American Psychiatric Association, 2013, p. 271)

Clearly, adolescents may be exposed to or directly experience any number of the above criteria in the context of school, interpersonal or domestic violence, neglect, or abuse. The National Child Traumatic Stress Network (Oseldman, 2018) proports examples of single, time-limited traumas, or “acute traumas” may include motor vehicle accidents, natural disasters, the sudden or unexpected loss of a friend or family member, or a school shooting. Further experiences may include acts of terrorism, victimization or interpersonal violence, accidents, and medical traumas such as chronic or life-threatening illnesses.

Studies show adolescents are regularly exposed to events they may experience as traumatic (McLaughlin et al., 2013). According to a national survey released by the U.S. Department of Justice (Kilpatrick et al., 2003), 40% of adolescents aged 12 to 17 have witnessed violence, eight percent have been sexually assaulted, and seventeen percent have been physically assaulted. The survey reports:
Particularly salient among these findings is the higher prevalence of all types of victimization among black and Native American adolescents. Notably, more than half of Black, Hispanic, and Native American adolescents had witnessed violence in their lifetimes. Also, Native American adolescents had the largest prevalence rate for sexual assault victimizations; whites and Asians reported the lowest. With respect to physical assault, Native Americans, Blacks, and Hispanics reported the highest victimization prevalences—20 to 25 percent of each group reported experiencing at least one physical assault. (Kilpatrick et al., 2003, p. 4)

The impacts of these traumas increase the risk of comorbid mental health concerns like depression, anxiety, and substance use, and often extend into adulthood (Gerrity & Folcarelli, 2008). The landmark Adverse Childhood Experiences (ACEs) study surveying over 17,000 adults found a significant correlation between childhood experiences of abuse and stress and the likelihood of drug and alcohol addiction, as well as suicide attempts (Felitti et al., 1998; Dube et al., 2001). Incidence of ACEs were also linked to later high-risk behaviors and outcomes, including smoking, severe obesity, multiple (>50) sexual partners, cardiac disease, sexually transmitted disease, and illicit and injected drug use – many of the leading causes of disability and death (Felitti, 2002). Studies have further indicated compelling ties between victimization and juvenile delinquency (Ford et al., 2006), suggesting increased pipelines to marginalization, incarceration, and intergenerational trauma, all of which disproportionately affect and impact people of color (Freudenberg, 2001; Jeffers, 2019; Dutil, 2020).
**Complex Trauma**

Though the DSM-5’s inclusion of repeated exposure is a step in the right direction, many would argue for the necessity of a diagnosis specific to the type of repeated and pervasive ‘complex or developmental trauma’ children and adolescents experience (Herman, 1992; Van der Kolk et al., 2009; VA.Gov, 2007; Sar, 2011; Bremness & Polzin, 2014; National Center for PTSD, 2015; Van der Kolk, 2017). The National Child Traumatic Stress Network describes trauma types to include the following: bullying, community violence, disasters, early childhood trauma, intimate partner violence (IPV), medical trauma, physical abuse, refugee trauma, sexual abuse, terrorism and violence, traumatic grief, and complex trauma (Oseldman, 2018). They further specify complex trauma to include the types of interpersonal, developmental, and/or repeated traumatic experiences which generally occur during the course of early childhood through adolescence:

Complex trauma describes both children’s exposure to multiple traumatic events—often of an invasive, interpersonal nature—and the wide-ranging, long-term effects of this exposure. These events are severe and pervasive, such as abuse or profound neglect. They usually occur early in life and can disrupt many aspects of the child’s development and the formation of a sense of self. Since these events often occur with a caregiver, they interfere with the child’s ability to form a secure attachment. Many aspects of a child’s healthy physical and mental development rely on this primary source of safety and stability. (Peterson, 2018)

Diagnostic and conceptual challenges of identifying and treating complex trauma remain. Firstly, the current diagnostic measure requires the experience of an ‘index’
trauma of actual or threatened death, serious injury, or threat of violence. As trauma is highly subjective, Briere and Scott (2015) argue these somewhat narrow specifics are not required for people to perceive an event as traumatic. Chiefly, affect dysregulation becomes far more pronounced. As this symptom is seen across a large breadth of mental illness, it often creates further challenges in the differential process and may lead to the wrongful diagnosis of a personality disorder (VA.gov, 2007).

Judith Herman (1997) has addressed the need for a diagnosis to describe the idiosyncratic symptoms of long-term trauma: Complex PTSD. She details that during these unique presentations of long-term trauma, individuals are typically held in some type of physical or emotional captivity or control and may be unable to escape. Roth et al. (1997) note initial conceptualizations of Complex PTSD’s symptomology “describe a clinical presentation reflective of the profound impact that traumatic experiences may have on self-regulation, self-definition, interpersonal functioning, and adaptational style” (p. 540). They elaborate that the psychological sequelae are not adequately captured by PTSD but have been frequently observed in trauma survivors seeking treatment.

Beyond the DSM-5’s physiological and psychological criteria that currently conceptualizes PTSD, complex trauma may present the same overarching themes of affect dysregulation, fragmented sense of self or identity disturbance, overt behavioral issues, and dissociation or depersonalization previously described in the proposed Complex PTSD.

It has also been suggested that the incidence and related symptomology of trauma in children are often misdiagnosed as Attention Deficit/Hyperactive Disorder (ADHD), Reactive Attachment Disorder (RAD), Oppositional Defiant Disorder (ODD),
pre- or sub-clinical borderline personality disorder (BPD), and Conduct Disorder (CD). (Van der Kolk, 2015, p. 111). When vague referrals containing “history of trauma”, or “trauma-like symptoms” are provided to ADHD centers, neurodevelopmental diagnoses and medication management seem almost the norm despite frequent incidence of subclinical criteria and suspected history of abuse and/or neglect. In The Body Keeps the Score, Van der Kolk (2015) discusses the many ways incidence of trauma can play out in children through the lens of attachment and attunement:

To my amazement, staff discussions on the unit rarely mentioned the horrific real-life experiences of the children and the impact of those traumas on their feelings, thinking, and self-regulation. Instead, their medical records were filled with diagnostic labels: ‘conduct disorder’ or ‘oppositional defiant disorder’ for the angry and rebellious kids; or ‘bipolar disorder.’ ADHD was a ‘comorbid’ diagnosis for almost all. Was the underlying trauma obscured by this blizzard of diagnoses? (Van der Kolk, 2015, p. 111)

Herman and others have hypothesized that Complex PTSD’s risk factors include early age of onset, exposure to interpersonal stress, and prolonged duration (Herman, 1992b; American Psychiatric Association, 1994; Spitzer et al., 1989). When considered in broader context of the patient’s history, the ‘impact of those traumas’ on a child’s thinking and self-regulation becomes paramount.

Again worth noting is the disproportionate incidence and impact of trauma among racially marginalized youth. According to the U.S. Department of Health and Human Services (2008), Native American, African American, Alaskan Native, and bi or multiracial children experience significantly greater rates of maltreatment compared to
their white (non-Hispanic or Hispanic) peers. Youth of lower socioeconomic status are more likely to experience undesirable life events, and thus “Racial, ethnic, and cultural groups that are overrepresented among low-income populations are placed at a higher risk of experiencing trauma” (Gerrity & Folcarelli, 2008, p. 16). As complex trauma involves repeated victimization, the effects of widespread racism, racial violence, and police brutality are not only traumatic at the individual level but lead to intergenerational trauma within minority communities (Bryant-Davis, et al., 2017). As discussed, repeated victimization, especially among youth of color, only contribute to the cycle of traumatic effects of repeated marginalization through structural inequalities.

**Neurological Impacts of Trauma**

The experience of early-life psychological trauma is associated with a number of cognitive and neurochemical impacts on the developing brain. Gabowitz et al. (2008) highlight the large body of research supporting the association between early trauma exposure and functional and structural changes in brain development, including elevated cortisol levels leading to neurohormonal impacts which are correlated with decreased volume in both the prefrontal cortex and hippocampus (Carrion & Wong, 2012). They describe how these changes, at minimum, hold the potential to create a number of neuropsychological deficits across the lifespan. Environmental causes such as abuse and neglect occurring during sensitive periods of brain development are further linked to a decrease in total brain volume, which increases in likelihood with longer duration or earlier onset of abuse (De Bellis et al., 1999). As personal resources typically allocated for development may be used instead for survival and navigating unstable or overwhelming environments (Cook et al., 2003), traumatized children and
adolescents may exhibit developmental capabilities resembling children much younger than themselves, such as challenges identifying physiological or affective states like hunger, or certain emotions (Ford, et al., 2005). As a result of these stressors, the youth’s regulatory capacity may become underdeveloped or depleted. Spinazzola et al. (2005) describe that in fact dysregulation is conceptualized as the quintessential characteristic of complexly traumatized children.

**Musical Implications for Adolescent Trauma**

Music plays a significant role in the psychosocial development of adolescents (DeNora, 2000; Schwartz & Fouts, 2003; Miranda, 2013). Some researchers suggest this developmental role of music can “create a window to the everyday psychosocial, social, and cultural needs of contemporary adolescents” (Miranda, 2013, p. 5). Accordingly, music has repeatedly been found to be a powerful tool for mood and emotion regulation in adolescents (Lacourse et al., 2001; Kim & Stegemann, 2016; Saarikallio & Erkkilä, 2007; Saarikallio et al., 2017), often a key symptom and challenge for survivors of trauma (USC Keck School of Medicine, 2019).

**Music in Adolescent Affect Regulation**

Saarikallio (2012) has identified seven generalized functions of music in affect-regulation set forth in the Music in Mood Regulation Scale (2012): *Entertainment*, where music is used to create a pleasant atmosphere to maintain current positive mood, *Revival* which represents achieving renewed energy when feeling tired or stressed, *Strong Sensation*, or music listening to evoke intense emotional experiences, and *Mental Work*, used for mental contemplation and cognitive reappraisal. The final three are specific to reducing negative emotions – strategies characterized by their function of
using music to cope with negative mood. These techniques include *Diversion*, where music is used to distract from negative thoughts and feelings, *Solace*, where music is used for comfort, acceptance, and understanding when feeling sad or troubled, and *Discharge*, where anger or sadness are released through music (similar to “vicarious release” put forth by Lacourse, 2001) and “reduction of negative activation” [RA]; von Georgi et al., 2006).

Research is further increasingly confirming individuals with mental illnesses use music more purposefully for emotional modulation in their daily lives than those without (Gebhardt & von Georgi, 2007; 2019; Gebhardt et al., 2014). For example, the strategy of Discharge/Reduction of Negative Activation is often successfully used and preferred by individuals with personality disorders in efforts to downregulate high affective activation, whereas this was not seen as predominantly in unipolar mood/affective disorders or in healthy individuals without the diagnosis of a mental illness (Gebhardt & von Georgi, 2007; Hereld, 2019). The field of mental health should not underestimate the capacity for music to play a significant role and function in the treatment of mental illness and healing from trauma.

**Music for Connecting with Others**

As discussed, the historical context and epidemiological data demonstrate our conceptualization of developmental trauma is changing (Stobbe, 2019). As such, some propose that new understandings and applications of its treatments may be indicated at every level: individual, family, community, and state (Chatterjee, 2019). In *Music Therapy and Trauma: Insights from the Polyvagal Theory*, Stephen Porges argues for a treatment of trauma consistent with new and updated findings:
...Treatment of trauma requires a new model distinct from the traditional psychotherapeutic strategies of face-to-face dialogue ...Music and music therapy strategies may provide this portal to the Social Engagement System and avoid the initial face-to-face interactions that may be misinterpreted as threat by a traumatized individual. (Porges, 2010, pp. 9-10)

Engaging interpersonally with music has shown to be an effective coping tool for adolescents who experience trauma (Austin, 2007; Davis, 2010; Sias, 2017; Beck, 2019). Research in music therapy further suggests music may act as a defense against dissociation by helping trauma survivors regulate their emotions during states of hyperarousal (Langdon, 2015) as well as activate the neurological mechanisms tied to our feeling socially entuned, having us more regularly connect with others (Porges, 2015; Porges, 2018). Though some have criticized the more recent theorizing of Van der Kolk and Porges about trauma and music's impact on the brain as oversimplified (McLean, 2016; McFerran et al., 2020), the field of music psychology has nevertheless revealed several findings which may generalize directly to the aftereffects and symptoms of adolescent trauma. One of music’s most basic roles may be in the facilitation of emotion identification which some would argue is prerequisite to the successful communication of one’s emotions, as well as fully processing their traumatic memories (Pearlman & Courtois, 2005; Linehan 1993). Some studies have found music interventions successful in facilitating the identification and resultant regulation of emotions surrounding trauma (Austin, 2007; Meila, 2017; Hereld, 2019).

More recently, music-verbal therapy trauma groups have shown to be valuable in the treatment of adolescent trauma – especially as trauma’s aftereffects mean they may
not always respond to traditional verbally-based therapy (Langdon et al., 2018). As severe and pervasive traumatization can result in the type of dysregulation that can lead to dissociation, self-destructive behavior, and suicidality, the implications of these outcomes are promising. Given the substantial literature situating music as a social and communal mechanism (DeNora, 2004; Rice, 2014), music interventions may act as a form of behavioral activation or ‘safe’ exposure for trauma symptoms, such as decreased interest or participation in activities, negative alterations in mood or beliefs, and general avoidance or feelings of detachment from others.

**Gaps in the Current Research Literature**

Numerous gaps in the literature point to the need to integrate existing research across psychiatric studies of use of music in everyday life; music therapy; and music in clinical practice. The occurrence of controversy & conflicting findings is similarly problematic: One needn’t look far to find headlines of seemingly contradictory research: “According to Science, Heavy Metal Makes You A Better Person” (Capobianco, 2017) vs. “Listening to Sad Music Makes You Sadder, Says Study” (O’Gorman, 2018). “The Dangers of Overestimating Music Therapy” (Swayne, 2014) versus “New Sound Treatment Kills Cancer Without Chemo” (Power of Positivity, 2016). Similarly, a web-based scoping search for iatrogenic effects of music therapy failed to produce a single result, highlighting the common trend of publication bias towards significant or positive findings. Disparities in reporting practice and research methodology similarly contribute to the need for a systematic review of the evidence.

Many settings in music and mental health are studying similar phenomena yet producing very different outcomes. Controlled settings such as clinical, inpatient, or
outpatient contexts are often better equipped to observe, report, and translate direct patient outcomes than once-weekly 30–45-minute music therapy sessions. As research in music psychology and cognition is primarily empirical, the data is typically collected and interpreted via systematic observation, treatment and controlled conditions, or interaction. However, research in arts-based therapies is often carried out and documented less methodically than psychiatric interventions despite evidence of genuinely promising outcomes. Outpatient settings such as private practice, classrooms, and music therapy centers may capture meaningful ecological factors commonly missed in clinical trials. Issues of funding, the types of training required for researchers and practitioners providing interventions, and other factors may account for these significant discrepancies. As such, the need for integration and cross-examination of existing research across multiple domains is indicated.

Finally, the issue of terminology need be considered. Within the fields’ research lies both semantic and practical inconsistency: in music and health literature alone, the distinction between active versus passive music therapy is crucial yet often misunderstood, especially when studies utilize music as adjunctive treatments (e.g., expressive musical behaviors such as group instrument playing) that fall outside the confines of what is considered strictly music therapy. The many different modalities of using music in the treatment of psychiatric concerns makes interpretation of study findings an additional challenge.

**Rationale, Primary Aims, and Key Research Questions**

As multidisciplinary research continues to uncover the promise of less-invasive interventions like music may hold for mental and physical health treatment, clinicians,
researchers, and music scholars alike have increasingly come together through the field of music psychology. The United Kingdom, Germany, and Scandinavia have been on the forefront of clinical neuromusicology studies for decades. As such, it is unsurprising that some of the most significant findings have come from cross-disciplinary studies in both musicological and medical settings.

The pairing of music as from the humanities and mental health as psychological science creates a unique and substantial need for integration of literature across multiple disparate settings: “trauma-informed classrooms,” music therapy, clinical psychology, neuroscience, psychiatry, and departments of Veteran’s Affairs. Multiple types of research should be examined, from rigorous randomized control trials and longitudinal studies to qualitative case studies and phenomenological analysis. Psychologists and other mental health professionals who feel music integration or interventions are indicated for a patient will benefit from this review by learning what strategies are currently used in practice, for what purposes, and to what outcomes.

The primary aim of this systematic review is to examine musical interventions for adolescent trauma survivors. This dissertation explores the following questions: How are clinicians using music with adolescents with histories of trauma? What musical interventions are used to improve affect regulation and other associated symptoms? What are the outcomes of musical interventions for traumatized adolescents?
Chapter 2: Methods

Systematic Review Approach

A systematic review of the literature was conducted following an integrative deductive methodology in accordance with PRISMA Guidelines, The Cochrane Handbook, and The Campbell Collaboration. A preliminary search of the literature suggested it would be most useful and informative to utilize both qualitative and quantitative studies from multiple fields. In order to integrate and compare findings from diverse studies and disciplines, a textual narrative evidence synthesis was conducted using Duke University Medical Center Library’s Searching Checklist for Systematic Reviews and The Economic and Social Research Council Methods Programme’s “Guidance on the Conduct of Narrative Synthesis in Systematic Reviews” (Popay et al, 2006).

In order to first explore the scope of existing literature, a broad mapping search was performed. Databases consulted include PsycINFO, SCOPUS, and ProQuest Central PTSDpubs, as well as hand searches of Music & Medicine, Journal of Creativity in Mental Health, and Psychology of Music. An extensive PROSPERO search was further conducted to confirm no similar reviews had been completed or were underway.

Eligibility Criteria

Inclusion Criteria

Peer-reviewed published literature including journal articles and dissertations were reviewed for inclusion. Materials needed to be available in English and published between 2000 and 2021.
Target phenomena of interest included musical interventions observed under clinical research parameters as well as clinical practice. The primary focus of the systematic review is trauma and its associated symptoms including deficits in emotion regulation, hypervigilance, avoidance or inability to withstand reminders of the traumatic event(s), difficulties with attention or concentration, challenges with event recollection, and presence of a history of one or more traumatic experiences. As complex trauma is not a formal diagnosis, a range of diagnostic concepts were considered to capture the ways trauma manifests across diverse symptomology and presentation. Articles with other diagnoses such as depressive disorders, trauma- and stressor-related disorders, dissociative disorders, disruptive, impulse-control, and conduct disorders, personality disorders, and anxiety disorders that reported evidence of traumatic exposure of dual diagnosis were additionally considered.

Musical interventions observed under clinical research parameters and/or directly implemented by clinical psychologists and master’s-level mental health clinicians, and master’s- and doctoral-level music therapists were reviewed for inclusion. Assessment tools were necessarily diverse, spanning from Likert-style scales to ethnographic data collection.

Studies needed to include research and clinical interventions conducted with adolescents between the ages of 10-18. Participants may vary on any other personal characteristics, including race, ethnicity, gender, sexual orientation, SES, and religion. Any setting where treatment was rendered (including inpatient and outpatient psychiatric treatment centers, community clinics, elementary, middle and high schools,
private clinical and music therapy practices, and hospitals or healthcare centers where data was collected) was considered.

**Exclusion Criteria**

Due to the highly diverse nature of relevant literature, all methodologies demonstrating strong or sufficient methodological and theoretical fidelity were eligible for inclusion. Theoretical works without described or demonstrated practical application were excluded. In effort to minimize confounding variables, studies that did not separately address the outcomes of music interventions and more broadly defined creative or expressive arts interventions were excluded. To ensure accuracy in elimination, a second reviewer was used to independently double code and count all inclusion and exclusion criteria for all studies in the final PRISMA numbers.

**Search, Screening, and Selection Processes**

Searched databases included PsycINFO, Academic Search Complete, PubMed (Medline) and ProQuest PTSDpubs. The search and identification strategy encompassed three main ideas: (a) Music: Music OR Music Interventions OR Musical AND (any combination of following) (b) Trauma: Trauma OR Traumatic OR Traumatized or Distress; (c) Adolescent: Adolescent OR Adolescents OR Child OR Youth OR "Young People" OR Teen OR Teenagers. Results from the three key concept searches were merged using the operator AND. Search results are included in Appendix C: Search Documentation Record.

Preliminary pilot searches yielded valuable information about appropriate Boolean operators and limiters. During piloting, the following search specifiers under key theme (b) Trauma were suggested and determined for inclusion: "natural disasters"
"sexual assault" "intimate partner violence" "family separation" "sexual violence" "community violence" "school shooting" "school violence" "suicide" "self-injury" "self-harm" "human trafficking" "sex trafficking" "hate crimes" "child abuse" "child neglect" "medical trauma" "complex trauma." In order to avoid confounding variables, limiters were further applied: NOT "art therapy" OR "art psychotherapy" OR “creative arts therapies” OR “dance therapy” OR “dance therapies.”

Search terms with complete parameters and search strategies are reported in full for one major database in such a way that electronic search may be replicated externally. The search strategy executed for PubMed is accordingly reported below.

On 3/21/2021, the finalized search syntax was completed and run through PubMed (MEDLINE):

psychotherapy" NOT "creative arts therapies" NOT "dance therapy"[Title/Abstract].

The search was implemented through Medline titles and abstracts for peer-reviewed and published journal articles published between the years of 2000 and 2021, in English, with limiters of human subjects. To ensure all articles pertaining to ages 10-18 were considered, both age categories “Children” (ages 6-12) and “Adolescents” (ages 13-18) were searched. The query produced 155 article results, which after 44 duplicates were removed (described in Results section) the remainder was run through screening phases one and two (title and abstract screen, discussed below). After the articles unrelated to subject matter were excluded, the remaining 26 were run through full-text review according to the inclusion and exclusion criteria set forth above.

**Selection of Studies**

Study selection was conducted in three phases: Title and Abstract screening (Primary Screening), Full-Text Review (Eligibility Screening), and Final Decision (Selection). In phase one, titles and abstracts were screened of each record utilizing the Screening Tool (Appendix D) with decision codes applied to each study: Continue to Abstract (CAB), Continue to Full Text (CFT), Undecided (UN), Exclude (STOP). During phase two and Full-Text Screen, criteria coding was applied to identify whether each study met the specified inclusion and exclusion criteria. Coding criteria were: Yes (Y), Unclear (UN), and No (N). Phase three involved Final Decision (Selection): Include (IN) or Exclude (EX). In order to reduce bias, a second reviewer was used in screening all articles. These processes are noted in detail under Appendices C and G: Screening and Selection Record and PRISMA Flow Diagram.
**Data Collection and Extraction**

To facilitate addressing the research questions consistent to textual narrative analysis, specific and standardized data points were collected for each study. Coding and data collection systems were designed by trial and error during pilot phase, as well as noting what other researchers with similar projects had successfully used (notably see Clark et al., 2016). A modified Cochrane Data Collection Form (Higgins et al., 2011; Appendix E) was selected and edited to inform data extraction and critical appraisal stages. Two research assistants contributed to the piloting of these forms.

Categories from the modified Cochrane Data Collection & Extraction form (Higgins et al., 2011) were merged with an Excel Data Extraction form for ease of uniform data management (Appendix F). Coding categories of selected studies included document ID and author(s), publication type (peer-reviewed journal article or dissertation), research variables (including study’s targeted symptomology or diagnosis, context, specific type of music intervention [active or passive], and main and additional objectives), research method: design/approach (interventional, observational, etc.), assessment of research variables; measure/assessment reliability-validity/utility, participants: population of interest, sample size, age, race/ethnicity, gender, and recruitment methods; setting characteristics: study location and data collection setting, and type of analysis conducted: theoretical, quantitative, or qualitative. Themes, interpretations, and conclusions by the study authors were included in data extraction, as well as themes identified by the dissertation author based on ongoing observation. Two research assistants contributed to data extraction which was cross checked by the primary author.
Quality Appraisal Methods

In order to systematically assess the validity, results, and reliability of studies included, a critical appraisal was conducted of individual quality assessment (see Appendix G: Critical Appraisal Process Form; Harrell, 2021). Selection of the appraisal form was facilitated and approved via consultation with dissertation committee. Modifications were made to reflect relevant categories of an integrative deductive methodology in accordance with PRISMA Guidelines, The Cochrane Handbook, and The Campbell Collaboration.

Study Quality Considerations

The strength of the literature foundation and rationale for study appraisals were based on the extent to which the article included current and relevant references, sufficient background literature, and theoretical sufficiency. Studies were further rated on the clarity and specificity of the research aims, objectives, and questions. Additional considerations included the study’s suitability for its research questions or theoretical basis and practical application, clear description of its methodological design or approach, strength of design characteristics (e.g., theoretical/methodological fidelity), potential confounds including recruiting bias identified, and consideration of internal and external validity. Specific criteria appraised included type of methodology, design/inquiry approach, clarity and specificity of research aims, quality of design or methodological approach, sample selection and characteristics, measures/data collection and analysis, discussion of limitations, and cultural diversity within the sample.

Criteria were appraised on a rating scale from 0 – 3 (0=Missing, 1=Weak, 2=Good/Adequate, 3=Strong) and applied independent scores. For empirical studies,
the total possible rating was 27, with the cutoff for inclusion equaling a minimum score of 10, indicating a combination of predominantly Strong and Good/Adequate appraisal ratings. The same numerical rating system was applied to theoretical works, with the cutoff set at “Mostly 2s” or “Mostly 3s,” indicative of Good/Adequate or Strong studies. Studies characterized as “Weak” based on the numerical rating system of <10 points or “Mostly 1s” were not included in the final data analysis and synthesis.

Implications for the conclusions and recommendations considered that due to the often-subjective nature of personal and therapeutic musical behavior, theoretically based conceptual and observational studies backed by rigorous evidence-based research were allowed for inclusion. Despite the high quality of literature in musical interventions for various mental and physical illnesses and relevant symptom reduction, the fact that complex or developmental trauma are not yet billable, standardized, or operationalized diagnoses may contribute to the comparably limited amount of literature in music interventions specific to adolescent trauma. As such, participant quotes from less methodologically rigorous studies were considered, as were other pertinent data.

Criteria for determining quality and relevance of data lifted from methodologically weaker studies included the content’s level of peer review, consistency across the related literature, and consultation with experts in the field.

Data Management

A database was created using coded information from the Excel spreadsheet. Specifically, data was taken from the Data Collection and Extraction form and Critical Appraisal Process form and placed into one master Excel document. Visual representations of the evidence base for research questions are represented in
Appendix A: *Evidence Base for Research Questions* and Appendix B: *Overview of Included Studies*. These literature tables of included studies were constructed prior to analysis. Reported variables included author, year, title, literature type/design (theoretical [conceptual or observational review or descriptive case study] or empirical [quantitative, qualitative, or mixed methods]), focus (variables, population, setting), key findings, reported outcomes, and application/commentary/critique. This master literature table was used in the ultimate analysis and synthesis of collected data in order to produce observations and hypotheses about patterns across studies, including most common types and settings of treatment, outcomes, and study quality.

**Data Analysis and Synthesis**

In order to integrate and compare findings from highly disparate studies and fields, a textual narrative evidence synthesis was proposed. A textual narrative synthesis involves commentary detailing a study’s characteristics, context, quality, and findings, utilizing the scope, similarities and variations across studies to draw conclusions (Lucas et al., 2007). Grouping the studies into largely homogeneous categories, the textual narrative synthesis is beneficial for synthesizing discrete forms of evidence (e.g., qualitative and quantitative), assessing the strength of evidence available, and identifying gaps in the literature which need to be filled (Popay et al., 2006; Lucas, et al., 2007). Given the highly diverse nature of study design, methodology, rigor, and outcomes of the targeted literature, it is of further value that the textual narrative approach is less likely to mask any shortcomings of individual studies.

Reflecting the methodology presented by Lucas et al. (2007), a stepwise textual narrative analysis/synthesis was performed, the first step including grouping the studies
categorically by research design: theoretical/conceptual or observational (including some pilot and single case studies), empirical qualitative, empirical quantitative, and mixed methods. Additional categorizations were grouped by setting division: psychology, primary care/medicine, music therapy, or community-based interventions, as well as intervention type. As described by Lucas et al. (2007), the scope, similarities, and variance across studies were used to draw conclusions across the presented research.

Patterns analyzed included the types of musical interventions in use across differing settings, as well as the impact and reported outcomes of varying musical behaviors and interventions on symptoms commonly seen in adolescent trauma survivors. Synthesis further aimed to identify any barriers or catalysts to successful implementation across settings.
Chapter 3: Results

The purpose of this study was to examine the use of clinical music interventions in the treatment of adolescent trauma. The study sought to answer these questions: (a) What musical interventions are used to address symptoms of adolescent trauma? and (b) What are the outcomes of musical interventions with adolescent trauma survivors? A visual representation of the evidence base for research questions in included in Appendix A: Evidence Base for Research Questions.

As discussed, a textual narrative evidence synthesis uses data analysis to produce insight about the scope, similarities, and differences across a literature base. Coding and thematically grouping articles into categories involved examining research methodologies, most common treatment settings and intervention types, study outcomes, typical study quality, and resultant emerging relationships.

Results of the Search

Included and Excluded Studies

As shown in the PRISMA flow diagram below (figure 1), a total of 752 articles were identified through the electronic search of databases. After 164 duplicates were removed, 588 unique articles remained for screening. Five hundred and eighty-eight articles were run through title and abstract screening for basic eligibility criteria pertaining to music, trauma, and adolescents, with 151 selected for full-text review. The following section will include the most common exclusion factors resulting in the deduction from 588 to 151 studies. During full-text review, 13 articles were excluded as not theoretical or empirical works, 21 articles were removed due to ultimately not including trauma symptoms or diagnoses, 11 were shown as not using music
interventions, 60 were removed for failing to meet the adolescent age criteria of 10-18, one was excluded for failing to isolate music interventions from more broad-based arts or expressive therapies, and one theoretical work was excluded due to lack of description or demonstration of practical application. Following review, 44 articles remained for data extraction and critical quality appraisal, with eight eliminated for failing to satisfy the required quality appraisal criteria. Ultimately 36 articles were eligible for and included in the study. A list of the 716 excluded studies is included in Appendix I.

**Figure 1**

*PRISMA Diagram of Search Results*
**Major Exclusion Factors.** The most common exclusion factor for this study was the age of participants. Despite the use of limiters for adolescent populations, many search results included broad population ranges, for example ‘children’ aged 3 to 18, or ‘adolescents’ ages 10 through 26. Studies in medical settings and particularly departments of pediatrics were a common example given the frequently treated age range includes infancy through ages twenty-one or beyond. Studies without clear reporting of outcomes specific to adolescents between the ages of ten and eighteen were excluded as part of the designated inclusion criteria.

As discussed above, other causes of exclusion include studies where music was not isolated as an intervention (e.g., in the case of arts-based or expressive arts therapies); the trauma had occurred during now-adult participants’ adolescence; if studies were not clinical but strictly observational or critical in nature, and if they did not include music interventions. Furthermore, non-experimental works needed to have sufficiently rigorous theoretical backing with practical examples of the use of music in practice. As such, a few studies were excluded due to being strictly commentaries, opinion pieces, or editorials without reference to evidence or literature base. Lastly, some studies were excluded for failing to clearly delineate the presence of trauma. Whereas it is possible some extracted study participants had either histories or symptoms related to traumatic experience (for instance youth undergoing cardiac surgery or presenting with disruptive or oppositional defiant behaviors in school), for the purposes of this project if the presence of trauma was not established clearly within the article’s text, it was excluded.
**Study Methodology**

As shown in figure 2 below, of the included 36 studies, 12 (33.33%) were theoretical, 13 (36.11%) were empirical qualitative, seven (19.44%) were empirical quantitative, and four (11.11%) were empirical mixed methods, producing a total of twelve theoretical and 24 empirical works. Five dissertations were included. Of the empirical methodologies, there were 15 case studies of which three included mixed methods, five randomized controlled trials of which one included mixed-methods, one clinical trial, two observational studies, and one study employing an empirical phenomenology. Designations of each included study's methodology are included in Appendix A: *Evidence Base for Research Questions*.

**Figure 2**

*Included Research Methodologies*

![Pie chart showing the distribution of research methodologies: Theoretical 33%, Qualitative 36%, Quantitative 20%, Mixed Methods 11%]*

**Participants**

As part of the inclusion criteria, a variety of ages were included between 10-18 years old. Though within studies gender and racial diversity was at times limited, on a macro level the included study participants were highly diverse. In terms of gender,
though several studies’ information was unspecified, total participants appeared to be a near-even balance of male and female, with little to no information specified about nonbinary, transgender, or gender fluid participants. Findings were similar for race/ethnicity: though several articles were relatively focused at the study level (e.g., all Japanese; all Israeli) the larger scale proved highly variable, with a rich mix of Aboriginal, African American, Australian, Black, Caucasian, European, Hispanic, Korean, Indigenous, Japanese, Latino, South African, Puerto Rican, and biracial and multiracial perspectives. Study sample sizes ranged from single case studies to $N = 190$, with theoretical and non-experimental works sometimes ranging higher.

**Settings**

Though initial hypotheses were that studies would form clean categorical boundaries between medical, community, mental health, and educational settings, the studies proved again incredibly diverse. Some studies formally included more than one research arm (e.g., classroom, outpatient, and substance rehabilitation centers) while others were more specific (e.g., children’s hospital outpatient radiation waiting room). Non-experimental works often involved multiple settings or even countries in which the intervention had been implemented. Most prevalent settings included community mental health centers, medical centers (e.g., hospitals, rehabilitation facilities, outpatient emergency and oncology departments, hospice care), disciplinary alternative education programs or group homes, private psychology or therapy practice, community youth centers, and prisons/correctional facilities.

**Research Question 1: What Musical Interventions Are Used to Address Symptoms of Adolescent Trauma?**
A total of 26 unique interventions were identified across studies discussed by a variety of programs, clinicians, and treatment settings, not counting those within strictly music therapy. Study interventions were grouped categorically for analysis, including traditional music therapy versus music interventions more broadly, and active versus passive.

**Active/Passive.** In order to shed light on the varying level of participation required or performed across interventions, a broad theme of active versus passive musical behaviors was first identified. For the purposes of this study, active participation was understood as any active engagement of music, singing, playing an instrument, learning or performing music, and songwriting. Passive activities largely included listening to music, whether live or recorded. Of the 36 included studies, 23 (63.89%) were coded as active, eight (22.22%) were coded as passive, and five (13.89%) were coded as a combination of the two.

**Music Interventions.** Identified music interventions are represented in Figure 2, *Clinical Music Interventions*. As shown below, interventions fall into a few main categories: music therapy, combined music therapy and additional mental health interventions; passive music listening incorporated into individual therapy and in other settings, music performance, group drumming experiences, musical interventions in classroom settings, and songwriting. Analysis shows music therapy was the most frequently reported intervention in the results of this search, followed by music listening, performance, group drumming, classroom music experiences, and songwriting. Individual study setting and research variable details are provided in Appendix B: *Overview of Included Studies.*
Figure 3

Clinical Music Interventions

Clinical Music Interventions

15 Music therapy alone
15 total articles

3 Music therapy + non-music intervention
   1 music-verbal therapy trauma group (combination music therapy + therapy)
   1 group music therapy + individual DBT (combination music therapy + psychiatry)
   1 music therapy-based social skills training (combination music therapy + CBT techniques)

5 Listening to music integrated into individual counseling/therapy
   2 nonspecific integrating music in session
   1 “bring in music they relate to”
   1 integrating rap music
   1 listening + incorporating music w/ progressive muscle relaxation

5 Listening to music as a clinical intervention
   2 listening to music in classroom setting
   1 listening to music in hospital setting (individually over headphones)
   1 intentional listening to music as a psychological resource
   1 analyzing lyrics

4 Music performance
   2 musical theatre (Fabulous Females program for incarcerated girls, reported in 2 studies)
   1 string ensemble
   1 recording music
   1 Taiko drumming performance

4 Group drumming experiences
   1 group drumming (HealthRHYTHMS) within residential treatment
   1 Taiko drumming (free play and practice)
   1 group drumming (DRUMBEAT) + CBT
   1 group drumming (Rhythm2Recovery) + CBT + optional family component

3 Music in education
   1 practicing reading with music and movement
   1 collaborative music making
   1 group counseling with music making

3 Songwriting
   2 songwriting in individual therapy
   1 songwriting in after school teen center

Music Therapy. Music therapy interventions were defined as such if they were performed explicitly by a licensed music therapist, with one exception where a doctoral candidate conducted a “music therapy-based social skills training program” under the
supervision of a doctoral-level licensed music therapist (Gooding, 2011, p. ii). Fifteen studies of strictly music therapy were identified, with three additional studies including a combination of music therapy and group psychotherapy, dialectical behavioral therapy (DBT), and social skills training using cognitive behavioral therapy (CBT) techniques (mentioned above). As such, eighteen studies included interventions delivered or directly supervised by music therapists.

**Music Listening in Counseling or Therapy.** Five studies reported the use of music listening with adolescent trauma clients in the context of individual therapy, including asking clients to “bring in music that they most relate to” (Turner, 2016, p. 90); integrating rap music through encouraging emotion identification and regulation and identifying client values and dreams through music (Armstrong & Ricard, 2016), and listening to and incorporating music into progressive muscle relaxation exercises (Keen, 2004). Two studies reported nonspecific integrating music into therapy through listening and discussion (Kazancioğlu, 2012; Cooper, 2012).

**Music Listening.** Five additional studies were identified reporting the use of music listening for research or clinical use in adolescent trauma outside the context of individual therapy. A study by Cheng et al. (2017) found private music listening to be the most commonly used and preferred internally focused coping method in the emergency department. Zanders (2012) reported on the use of music during foster care as a particularly salient and intentional means of fulfilling a number of adaptive coping goals (see Discussion). Two studies included listening to music in a classroom setting (Foran, 2009; Warner et al., 2016) and one reported analyzing lyrics in the context of improving social skills deficits (Gooding, 2011).
**Music Performance.** Four performance interventions were reported in five articles, including attendance in a string ensemble (Uhler, 2021), digitally recording music (Viega, 2018), Taiko drumming (i.e., recitals; Yuhi et al., 2017), and musical theatre program *Fabulous Females* developed for rehabilitation and trauma processing with incarcerated girls (Palidofsky & Stolbach, 2011; Palidofsky, 2010).

**Group Drumming.** Four group drumming experiences were included, one of which was an extension of the aforementioned Taiko drumming study in a separate outcome arm for free play and practice (Yuhi et al., 2017). Two articles by the same author (Faulkner, 2011, 2017) illustrated the evolution of programs *DRUMBEAT* to *Rhythm2Recovery* detailing their expansion from an experiential group intervention for at risk youth to broader applications of CBT, ACT, and family systems work. Lastly, a randomized controlled trial showed statistically significant positive effects of drumming program *HealthRHYTHMS* when compared to the control group (Bittman et al., 2009).

**Classroom Music Experiences.** Studies were further grouped into educational/classroom settings, with the exception of classroom music listening which is grouped under *Music Listening*. All active music behaviors in the context of teaching high-risk or traumatized adolescents, these interventions included classroom reading with music and movement (Foran, 2009), collaborative music making (Warner et al., 2016), and collaborative music making in the context of trauma debriefing after a severe tornado (Davis, 2010).

**Songwriting.** Two songwriting interventions were detailed by the same author in individual therapy, including use of technology in therapeutic songwriting (Viega, 2018) and songwriting as a therapeutic assessment tool (Viega, 2018). A third songwriting
intervention was reported through a single case study in the context of an after-school teen center (Kinney, 2012).

**Research Question 2: What Are the Outcomes of Musical Interventions with Adolescent Trauma?**

For reporting purposes, outcomes were separated into two symptom and broad outcome categories: Increased/Improved and Decreased (detailed in Appendix B: *Overview of Included Studies*).

**Increased/Improved.** Each of the 36 included studies reported at least one positive outcome in relation to their music intervention. Increased and improved positive outcomes were further grouped into domains, including Social and Interpersonal Functioning, Regulation, Identity Development/Formation, Self-expression, Emotional Processing and Trauma Reframing, Coping, Feelings of Resilience, Sense of Safety, Engagement, and Biological.

In the domain of social and interpersonal functioning, 13 or 36.11% of studies reported 16 total outcomes, including increased or improved communication (3), social functioning/integration (3), family bonding/functioning (2), interpersonal skills (1), healthy attachments (1), willingness to help others (1), increased trust/therapeutic alliance (1), community (1), relationships with peers and teachers (1), meaningful connection (1), and social support (1). This was the most frequently endorsed outcome domain.

The second most common domain was regulation. Thirteen or 36.11% of studies endorsed 15 outcomes within this area, including self-regulation (5), emotion regulation (4), affect regulation (3), behavioral regulation (1), and mood regulation (1).
In the category of identity development/formation, nine or 25% of articles reported 12 total associated positive outcomes, including identity development or formation (3), sense of personal agency (2), self-esteem (2), self-discovery (1), sense of competency (1), pride (1), political agency (1), and self-awareness (1).

For self-expression, 11 or 30.56% endorsed positive outcomes specific to self- or emotional expression (11). Similarly, 11 or 30.56% of articles included outcomes related to emotional processing and trauma reframing, including emotional processing (3), trauma reframing (5), emotional release (2), and catharsis (1).

Subsequently, nine or 25% of all studies reported coping outcomes, including explicitly coping, (5), frustration and distress tolerance (2), and relaxation (2). Seven or 19.44% of articles including outcomes regarding feelings of resilience, including hope (3), resilience (2), morale (1), and positive resistance (1).

For the Sense of Safety domain, six or 16.67% of included articles reported outcomes including sense of safety (5) and stability (1). Five or 13.89% endorsed improved engagement, including engagement itself (3), participation (1), and school/work performance (1). Lastly, five or 13.89% of all articles reported biological outcomes, including increased oxytocin levels (1), outward signs of contentment (1), health outcomes (1), affective state (1), and cognitive processing and memory (1).

**Decreased.** In the domain of decreased or reduced symptoms, categories were divided into Psychological, Behavioral, and Biological. Across all included articles a total of 40 reductions were reported. Twenty-nine or 72.5% of all reported decreased symptoms across 17 studies were categorized as Psychological, including distress (5), anxiety (5), depression (3), dissociation (2), tension (2), negative mood or affect (2),
loneliness or feelings of isolation (2), panic (1), anger (1), stress (1), fear (1), agitation (1), feelings of overwhelm (1), negative self-evaluation (1), and repressing emotions (1). Behaviorally, ten or 22.5% of reported reductions were found in seven studies and included behavioral problems (2), self-injury or self-harm (2), noncompliance or resistance to treatment (2), verbal outbursts (1), negative coping strategies (1), and social skills deficits (1). Two or 5% of endorsed all observations were categorized as Biological and found in two studies, including levels of pain or pain perception. Interestingly, 15 or 41.67% of the 36 included articles did not report on reductions or decreases in negative symptoms. This may be due to the number of theoretical/descriptive (N = 12) studies included. Nevertheless it is important to note every article included reported on at least one positive outcome irrespective of methodology.

Study Quality

Included articles were assessed based on the Critical Appraisal Process Form shown in Appendix G. Overall, 23 total studies were graded as Strong with 13 studies marked Good/Adequate. Within methodological domains, theoretical articles included six Strong and six Good/Adequate. For experimental qualitative, quantitative, and mixed methods, 17 were deemed Strong with seven marked Good/Adequate. Visual analysis showed an even distribution of both Strong and Good/Adequate studies among methodologies with the exception of empirical quantitative, where all seven studies were rated Strong. Within the 15 studies reporting no reduction in negative symptoms, seven or 46.67% were rated as Strong, with the remaining majority (eight or 53.33%) rated as Good/Adequate.

Other Relevant Findings
In addition to the results reported above, a number of other findings emerged. One pattern which emerged early in the process and remained consistent throughout was the seemingly greater amount of research and reporting on pediatric and young child populations versus adolescents. This may be due to fewer clinicians writing and publishing on their work with adolescents, but it is notable in the context of the well documented research on the significance of music in social, personal, and cultural identity formation during adolescent years (DeNora, 2004). There was relatively comparably less research identified in the search authored by or specific to clinical psychologists ($N = 2$) as opposed to other mental or medical health providers. Given the documentation of clinical psychologists working in research on interventions for music in affect regulation (von Georgi et al., 2009, 2011; Gebhardt et al., 2014, 2016; Moore, 2013; Laansma & Haffmans, 2016; Sakka & Juslin, 2018; Groarke & Hogan, 2019) it is possible the search terms of this study specific to trauma precluded a wider net of what is currently used in research and in practice with other adolescent populations. It is further possible that the written and published research is lagging behind the practice (McLean, 2016; McFerran et al., 2020). Perhaps the one of the most significant findings overall was the amount of racial and ethnic diversity shown across settings, methodologies, and authors in the use of music interventions in adolescent trauma.

**Synthesis of Results**

As discussed in Chapter 2, an integrative deductive synthesis uses “existing concepts and categories to extract, describe, and summarize data from multiple studies” (Boland et al., 2017, p. 204). This project’s research questions surrounding interventions and outcomes were used to determine relevant pre-existing concepts for
both subgroup and larger synthesis (i.e., music therapy versus other music interventions; active versus passive use of music, and theoretical, qualitative, and quantitative methodologies).

**Interventions**

As discussed, interventions included a number of active and passive musical behaviors with active ($N = 23$) being the most frequently used type. Five studies used a combination of active and passive interventions, leaving 28 total studies that included some use of active music interventions. Interestingly, all studies reporting decreases in negative symptoms involved some degree of active use of music. Each of those occurred in a type of institutionalized setting (e.g., school, university hospital, classroom, etc.). It is important to note three of the music listening practices (categorized for the uniform purposes of this study as passive) were actually described by authors as “active” listening (Armstrong & Rickard, 2016; Plener et al. 2010; Zanders, 2012) and will be addressed in Chapter 4. Every private practice mental health setting reported by a single clinician used strictly passive music interventions ($N = 4$, these distinct and not including the three articles referenced above).

Certain activities were found to be used more frequently with certain groups or settings. For example, of the 15 strictly music therapy interventions, all but two clinician authors (Viega, Hussey et al.) in three studies (Viega, 2017, 2018, both described as “music therapy settings”; Hussey et al., 2008, a youth residential treatment center) took place in either medical settings ($N = 7$) or outside of the United States ($N = 5$). Though this analysis is limited by a small sample size, it is worthwhile noting the majority of
music therapy targeting adolescent trauma symptoms in the United States appear more concentrated to medical settings.

Similarly, with the exception of the aforementioned music therapy study in a residential setting (Hussey et al., 2018) non-music therapy interventions (specifically music performance and playing) were predominantly used in settings and for populations presenting with higher risk or more acute symptomologies and resultant treatment targets (e.g., decrease violent or self-injurious behavior, improve emotion regulation, decrease noncompliance or recidivism, etc.) including juvenile detention centers, inpatient psychiatric hospitals, disciplinary alternative education programs, emergency departments, youth prisons, and locked residential treatment facilities.

**Outcomes**

Several outcome themes additionally emerged. Thematically, the most total improved or increased outcomes revolved around social connectedness, regulatory capacity, and identity formation. Biological outcomes were the least reported in both increased and decreased symptom domains. With the exception of “increased trust/therapeutic alliance,” all outcomes under social connectedness were achieved within active uses of music. Within the Regulatory domain, including self-, emotion, affect, behavior, and mood, 12 or 80% of the 15 outcomes were through non-music therapy interventions and included music performance, music listening, and one combined music therapy and DBT treatment. Importantly, the two studies resulting in statistically significant decreases in self-destructive behavior (suicidality and self-harm) remained as such when again measures were taken at 6 weeks and 8 weeks respectively, suggesting these learned regulatory skills may be generalizable (Bittman
et al., 2009; Plener et al., 2010). Identity formation outcomes were broadly noted across music therapy and other music interventions and seen almost exclusively in active or combined active and passive behaviors.

On an individual outcome level, the most frequently reported increased or improved outcomes were self- or emotional expression (11), self-regulation (5), trauma reframing (5), coping (5), sense of safety (5), and emotion regulation (4). Self- and emotional expression was demonstrated equally across music therapy and other music intervention domains, as well as active and passive styles. Reported outcomes of increased “self-regulation” were seen in predominantly non-music therapy interventions (4 out of 5), as were affect regulation (2 out of 3). Emotion regulation outcomes were only seen in non-music therapy interventions with at least some mention of performative aspect (4/4). For trauma reframing, outcomes occurred across music therapy and other interventions and active and passive behaviors alike. Notably, each of the articles reporting a reframing of trauma contained an element of self-described agency or authorship, moving from passivity to initiative and control, or an inherent sense of choice in shaping their intervention experience through songwriting or composing. Coping as an outcome was reported predominantly in music therapy interventions (4 out of 5). The most commonly reported increased or improved symptoms in the eight passive interventions were self- or emotional expression (seen in music listening and music therapy), followed by self- or emotion regulation (seen in music listening).

Regarding reduced or decreased symptoms, most common reports were linked to studies with either active or combined active and passive uses of music. Six or 40% of the 15 explicitly music therapy interventions did not report a reduction in negative
symptoms. Of the eight passive interventions, five did not report on any reduction in negative symptomatology. Thematically, the most commonly endorsed symptom reductions were psychological in nature, followed by behavioral. It is important to note individual symptom reductions within each theme could each arguably fit into either psychological or behavioral domains, as the themes were created solely for the purposes of data analysis and synthesis. The author recognizes that self-harm, for example, could just as easily be placed within the broader domain of Psychological Symptoms than Behavioral, as could others.

Psychologically, reduced distress was reported across several settings and among both music therapy and other music interventions of an explicitly active nature. Decreased anxiety was reported in both active and passive interventions with decreased depressive symptom reports confined to active. Both reports of reduced dissociative symptoms took place in the context of combined music therapy and inpatient psychiatric treatment.

Behaviorally, reductions in self-harming or self-injurious behavior took place in combination music therapy and DBT and a group drumming intervention, both of which occurred in residential and inpatient treatment. These interventions were classified as active and combined active and passive in nature. Nearly all residential mandated treatment or detention centers reported an active and performative use of music (i.e., either performing or playing of instruments and singing) with several increased positive outcomes and decreased negative symptoms reported across a number of social, psychological, and behavioral domains.
Chapter 4: Discussion

Overview of the Study

As the experience of adolescent trauma can leave residual psychological impacts that do not always respond to traditional verbally based therapies (Langdon et al., 2018), the resultant symptoms should be addressed through culturally and contextually sensitive means. Many studies of varying approaches and methodologies have been conducted on the impact of music on emotional and physical well-being, as well as the efficacy of treatment in mental and physical illness. All healers and practitioners working with trauma would benefit from learning how music is used to treat the symptoms of adolescent trauma. The purpose of this study was to systematically review the types of music interventions used in clinical practice for the treatment of adolescent trauma survivors, and to what outcomes.

An electronic search was completed of four databases for peer-reviewed articles and dissertations published in English between 2000 and 2021. Methodology was restricted only with theoretical literature (i.e., needed to include a described or demonstrated practical application of music interventions). Grey literature and results of hand searches were not included. Following full text review of 151 articles, 36 were systematically chosen for inclusion. An independent audit of 100% of the extracted 752 articles was conducted by a second reviewer to ensure accuracy in the coding of excluded studies.

A textual narrative synthesis was completed on all final articles, including 13 empirical qualitative studies, 12 theoretical studies, seven empirical quantitative, and four mixed methods. There were 31 peer reviewed articles and five dissertations. Of the
empirical methodologies, there were 15 case studies, five randomized controlled trials, one clinical trial, two observational studies, and one empirical phenomenology. All studies included adolescents ages 10-18, music interventions isolated from broader expressive arts therapies, and treatment targets specific to trauma.

Results from the included 36 articles suggest music interventions yield several positive impacts on the symptoms of adolescent trauma, including increased sociability and interpersonal functioning, self-regulation, identity development, self-expression, emotional processing, coping, feelings of resilience and safety, engagement, and biological outcomes. Substantial heterogeneity in reporting practices, especially among theoretical and qualitative studies, yielded perhaps the greatest challenge in interpretation.

Significance of Findings Related to the Research Questions

Research Question 1: Interventions

Music Therapy. One significant finding within the intervention domain was the most common settings of music therapy in the United States. As noted in Chapter 3, all but two primary music therapy studies occurring in America were in medical settings. There are a number of possible explanations, especially when taking into account the remaining five music therapy studies occurring outside of the United States were implemented across several settings: youth community mental health centers and schools in Australia, and participants’ communities, homes, and workplaces in Israel. This is consistent with how North American children’s hospitals often have music therapists embedded in pediatric child life teams (Loewy, 2015) as well as with the literature documenting the proliferation of music therapy across multiple settings in
Australia (Thompson & Olsen, 2021; Guerrero et al., 2014; Hense et al., 2018). It is further possible that due to the nature of adolescent presentations in residential treatments or emphasis on symptom reduction in American mental health care that interventions are more strictly relegated to highly evidence-based practices (McFerran et al., 2020).

In a recent large scale ($N = 2,495$) international survey of music therapy practices and worldwide trends, only 19.9% of all music therapist respondents endorsed working with Trauma-and Stressor-Related disorders (Kern & Tague, 2017). Notably, 46.6% of all funding sources were through Facility/Hospital Budget, with only six percent funded via private insurance plans. Nearly half of all respondents reported holding a second job (48.7%). The most frequently reported treatment targets were “communication skills (79.2%), emotional skills (76.1%), and social skills (64.8%)” (Kern & Tague, 2017, p. 271), and the most commonly used interventions were singing, playing an instrument, and improvisation. Overall, music therapists did not endorse frequent use of interactive media or technology.

**Other Music Interventions.** Though the results of this study indicate music therapy has much to offer individuals of all ages, it is possible adolescent trauma survivors are more often served by mental health professionals with training specific to trauma, both due to general scope of practice and current insurance and funding regulations. It is further possible that both adolescents generally and adolescents in significant distress may be more open to less structured and more open-ended therapeutic uses of music (McFerran, 2017; Kim & Stegemann, 2016). Though the results of the current study did not identify any studies of some commonly known
trauma interventions such as TF-CBT, music is frequently cited in its research as client-
chosen and supported coping skill, an aid in the creation of trauma narratives, and in
other modules such as Psychoeducation, Affective Modulation, and Exposure and
Cognitive Processing (Cohen et al., 2012, 2018; Isaac 2015; Wymer et al., 2020). This
prescribed use of music in TF-CBT has extended across cultures internationally (Murray
et al., 2013), diagnostically for autism spectrum disorders (Romney & Garcia, 2021) and
modality to both telehealth (Romney & Garcia, 2021) and group format (Nedela, 2017).
Music has been extensively used in conjunction with other expressive arts formats by
creative arts therapists in the treatment of adolescent trauma (Beer & Birnbaum, 2019;
Malchiodi, 2020) and is seeing increased feasibility in Guided Imagery and Music (GIM)

Of the non-music therapy interventions, the two most commonly reported fell
within the domain of music listening and performing/playing. In line with the statistics
presented above, this finding is significant in that it supports the general use of music in
treatment made more widely available. One study concluded simply listening to music
alone played “an increasingly important role when the participant did not have a healthy
attachment with the foster parent” (Zanders, 2012, p. 105). This is consistent with the
literature detailing the general significance and accessibility of music listening in the
lives of foster youth (Austin, 2007; Cohen et al., 2012; McFerran et al., 2020; A. Barriga,
personal communication, December 11, 2020; Hereld, 2021). Overall, results suggest
music interventions may be particularly valuable for adolescent trauma survivors
because of their inherently open-ended and flexible approach, cultural and social
significance, and intrinsic developmental importance in adolescents’ lives. Furthermore,
the COVID-19 pandemic has demonstrated the importance of exploring and embracing creative and remotely available approaches in the treatment of adolescent trauma.

**Passive Music Use.** Almost all passive music use was reported within the setting of private mental health practice, each of which described positive outcomes most commonly seen in emotional expression and regulatory domains. As one primary goal in both trauma therapy and general psychotherapy is emotional and verbal processing of personal experience, these interventions and outcomes are not only desirable but feasible for individual counseling contexts. In addition to the advantageous outcomes of music interventions such as identity formation, trauma reframing, and feelings of resilience and hope, clinicians could teach clients and patients generalizable skills and methods to process what they have experienced. Furthermore, research has demonstrated passive music use to be an important element of both music therapy and other music-based interventions for adolescents due to its applicability and availability across many contexts and settings (Kim & Stegemann, 2016; Montello & Coons, 1998; Laansma & Haffmans, 2016).

It is important to note some researchers and clinicians consider intentional music listening for regulatory purposes an active endeavor: three of included interventions characterized as passive by their nature indeed stated just that (Armstrong & Rickard, 2016; Plener et al. 2010; Zanders, 2012). Armstrong & Rickard (2016) explain rap therapy: “This active co-listening to music with adolescents aims to provide therapeutic space for personal processing of heartfelt emotions and disaffection with school and society that often underlie persistent patterns of violence…” (p. 427). They go on to describe that when developing the trauma narrative, therapists should encourage the
client to relay their perceptions, thoughts, and feelings surrounding the traumatic event. They state the goal of this technique is to establish a “culturally meaningful therapeutic setting that facilitates increased disclosure of emotion” (p. 428). Zanders (2012, p. 97) described participants’ use of music as explicitly “a psychological resource” as opposed to leisure-time activity. Specifically,

Participants used music listening as a catalyst for socialization and identity formation. Listening to music with friends provided these adolescents with an opportunity to discuss and debate life issues, thereby comparing their own perspectives to those of others. This, in turn, helped them to find themselves and shape their own musical and personal identities. (p. 97)

In contrast to truly passive music listening (e.g., hearing a live musician play in a nursing home or hospital lobby, or perhaps in the background while receiving routine vaccinations), some would argue when music is used for a specific, conscientious purpose it becomes active, enabling the individual their agency, choice, and sense of control (DeNora, 1999; 2004; Saarikallio, 2020).

**Research Question 2: Outcomes**

In the outcomes domain, positive increases were more often reported than decreased negative symptomology. Furthermore, a significant number of the total included studies ($N = 15$ or 41.67%) only reported positive effects characterized by increased or improved outcomes, with no mention of decreased or reduced symptoms. Only nine of the 15 music therapy studies and 12 of 21 non-music therapy interventions reported reductions in symptoms. Of the empirical/experimental studies, eight of 11 music therapy studies reported negative reductions, with 11 of 13 non-music therapy
studies reporting negative reductions. As mentioned, despite the fair number of theoretical/descriptive studies ($N = 12$), each of the final 36 articles reported on positive outcomes. Given the current presiding model of evidence-based practice models favoring symptom reduction (McFerran et al., 2020), it is worthwhile noting both for funding sources and when considering clinical work, it may be beneficial from research and practice perspectives to consider increases in positive outcomes as well as decreases in presenting problems as part of a thorough, reflexive examination and documentation of treatment progress and efficacy.

**Social Connectedness.** The most common improved outcomes across studies were socially oriented, an unsurprising finding when considering the well-documented social nature of music (Clayton et al., 2012; DeNora, 2004; Rice, 2014). This is particularly relevant for trauma symptoms that may be improved by higher levels of interpersonal engagement, such as DSM-5 Criterion D5, “Markedly diminished interest of participation in significant activities,” and D6, “Feelings of detachment or estrangement from others” (American Psychiatric Association, 2013, p. 272). Though almost all social outcomes were within active uses of music, it is important to note literature suggests even ‘passively’ listening by oneself can create feelings of connectedness and the belief that one is not alone in their experience (Bicknell, 2009; Hereld, 2019; Gantz et al., 1978, Saarikallio, 2008).

**Regulatory.** As previously discussed, the second most common outcome theme was regulatory in nature, including self-regulation (5), emotion regulation (4), affect regulation (3), behavioral regulation (1), and mood regulation (1). A relevant component of affect regulation inherent to trauma is the commonly described notion of the loss of
control, or in some pervasive instances, one’s sense of self or subjectivity (Austin, 2007). However, when one holds the power to balance and control how they process, experience, and respond to painful emotions, one begins to regain a sense of agency.

In school and educational settings ($N = 7$, many of which involving transdisciplinary collaborations between clinicians and researchers), themes of cultivating spaces where students felt safe laid the groundwork for enhanced emotion regulation, self-expression, and communication. This groundwork led to improved student engagement, performance, and learning in nearly all studies.

Recall that 80% of the included studies with regulatory outcomes were non-music therapy interventions. It is possible traditional music therapy focuses more on emotional expression, processing, and short-term goals, where other interventions situated in treatment settings align more strongly toward skills development and symptom reduction. Based on the positive findings from the studies using combined music therapy and traditional psychological or psychiatric treatment (Bittman et al., 2009; Plener et al., 2010), both of robust, detailed, and replicable methodology showing statistically significant reductions in self-harming behavior in the context of trauma, further collaboration between the fields of music therapy, music psychology, and mental health treatment is warranted.

**Possible Explanations for the Efficacy of Music Interventions.** Research has put forth a number of biological, psychological, and cultural explanations for music’s effectiveness as an intervention. Biologically, several neuroanatomical and neurochemical bases of musical engagement have been identified: enhanced functional connectivity in dopaminergic reward-based systems (especially the ventromedial
prefrontal cortex, ventral striatum, and nucleus accumbens) which are involved in mediating motivation, pleasure, and reward; stress and arousal processes linked to cortisol and corticotrophin-releasing hormone that music has been shown to improve; the regulatory systems which music is proposed to moderate by initiating brainstem responses including pulse, heart rate, blood pressure, muscle tension, and skin conductance, and social affiliation via the neurochemical systems of oxytocin and vasopressin (Chanda & Levitin, 2013; Salimpoor et al, 2013; Loui 2020). Music’s biological capacity to impact motivational, regulatory, and affiliative social processes likely lend to its use as a powerful tool of therapeutic engagement.

There are a number of psychological accounts for music’s efficacy. Locus of control is strongly correlated with health, recovery, and well-being (Chanda & Levitin, 2013). Allowing people a sense of choice in the music they are making or listening to may enhance their feelings of control and agency amid the otherwise difficult circumstances which led to treatment. Stegemann et al. (2010) found music may fulfill functions similar to non-suicidal self-injury for adolescents such as anti-dissociation and affect regulation through the more interpersonal aspects of music (e.g., examining or identifying with the lyrics). These findings were replicated or supported through further studies (Lacourse et al., 2001; Gebhardt & von Georgi, 2007; Baker & Brown, 2016; Hereld, 2016; 2019). The psychological mechanisms for which music can promote coping are numerous and have been extensively detailed in the literature (DeNora, 2004; Van den Tol & Edwards, 2013; Park, 2004; MacDonald, 2013; Van Goethem & Sloboda, 2011; Thompson & Schlaug, 2015).
Research further provides cultural explanations: music making together is shown to promote social bonding across a range of ages and cultures (Loui, 2020). Music has long been identified as an emotional communication system (Huron, 2010) – interactive, affective, and communicative. In Music and Biocultural Evolution, Ian Cross (2012) describes the differences seen in music and (spoken) language, not least of which music’s potentially greater capacity for “sustained, non-conflictual, affiliative social-interaction” specifically due to its comparably ambiguous nature (p. 24). He writes that across cultures, “Music appears to have several clearly identifiable attributes; it is complexly structured, affectively significant, attentionally entraining, and immediately – yet indeterminately – meaningful” (Cross, 2012, p. 22). He continues, “The capacity for culture is manifested in our ability to ‘share intentionality’ with others; we are able to interact with others in ways that indicate that we can infer and share their feelings, attentional foci, intentions, and goals” (Cross, 2012, p. 25). That the client is able to contribute by helping choose the music affords intrinsic cultural flexibility and relevance, allowing for the expansion of traditional Eurocentric talk therapy. This is particularly salient when working with non-dominant clinical groups and may further facilitate discussions of oppression, injustice, and liberation.

Given music’s demonstrated prosocial and interactive functions, it is possible that for some, music as a medium holds the capacity to promote a stronger therapeutic alliance and shared, trusting experience than verbally based interventions alone.
Significance of Other Findings

**Diversity**

One of the largest findings of this project was its diversity. There was significant variance across study methodologies, participant characteristics, settings, outcomes, and treatment targets. This variance has several possible explanations: (a) Inclusion criteria were broad in several ways; (b) The nature of arts research methodology is inherently diverse; (c) Trauma is not a singular or static construct but evolving and complex in definition, treatment, and expression. These stated, the transnational, universal significance of music cannot be understated, meaning not that we all respond the same way, but that we are all affected.

**Body of Evidence**

In a systematic critical interpretive synthesis of the research claims surrounding trauma, rhythm, and music, McFerran et al. (2020) reported one of the greatest challenges music therapy research faces is the frequent disconnect between theoretical foundation, types of intervention, outcomes, and methodological approach. These findings were thoroughly replicated in the results of this dissertation. Though many articles provided in-depth examinations of the literature, they often lacked sufficient descriptions of the interventions and/or the clear connections between treatment aims and outcomes. Only a few articles utilized a control group through which to objectively determine the efficacy of the music intervention. Many articles further revealed a high risk of bias which is consistent with findings from other systematic reviews in this area (Kim & Stegemann, 2016). Furthermore, very few reported on overall efficacy, or nonsignificant or contradictory findings. Attrition was another common issue possibly to
due to the nature of the population which often faces disproportionate barriers to care and other structural hurdles. Only three empirical studies explicitly reported the outcomes were unclear or nonsignificant. Medical settings generally had the highest correlation with Strong study quality rated during quality appraisal stages. Though steps were taken in the quality appraisal to consider and acknowledge the clear Western, evidence-driven bias in evaluating research, there are nevertheless significant weaknesses in much of the evidence base, making the body of literature's study quality highly variable on the whole.

**Implications and Recommendations for Research**

One of the ongoing challenges inherent to human research is the amount of potential confounds intrinsic to any study, and this is all the more applicable for interventions and arts-based studies. Healing does not occur in a vacuum and a number of variables are unavoidable with any ‘in-vivo’ or non-clinical controlled trials. Nevertheless, there is a need for greater consistency of terms and descriptions of interventions, methodologies, and reporting standards (Uhlig et al., 2017). More funding is needed not only for research but for training in these practices. A further problem plaguing clinical music fields is that the studies are often not replicable. When test-retest reliability and internal/external validity requirements dominate the sphere of federally funded research, the often-anecdotal and idiosyncratic nature of music therapy may be deprioritized in favor of clinical interventions with careful and scientific documentation, such as Melodic Intonation Therapy or Rhythmic Auditory Stimulation in the rehabilitation domains (McFerran et al., 2020). One recommendation from the results of this dissertation to significantly improve study validity is a more thorough, clear
description of interventions, including length of treatment, number of sessions, credentials or level of training by the intervention provider, with specific methods linked to predicted outcomes upon which hypotheses can be tested. Robb et al. (2011) systematically addressed recommendations for reporting guidelines in music interventions in such a way that they may be replicated and implemented externally. These recommendations were created in line with the “Consolidated Standards for Reporting Trials (CONSORT) and Transparent Reporting of Evaluations with Non-randomized Designs (TREND) statements for transparent reporting of interventions while taking into account the variety, complexity, and uniqueness of music-based interventions” (Robb et al., 2011, p. 342). The guidelines pertain to seven specific components: underlying theory, content, schedule and method of delivery, individual performing the intervention, treatment fidelity, setting, and unit of delivery (e.g., individual or group setting). They conclude these reporting guidelines are critical in translating research of music-based interventions to practice, with individual reporting processes “guided by the study’s theoretical framework” (Robb et al., 2011, p. 348). If these reporting guidelines were made the standard of reporting in clinical music practice, it is almost certain the state of the field’s research would exponentially improve.

**Implications and Recommendations for Practice**

The results of this study suggest general music interventions prove highly useful and should be made more readily available in settings with high concentrations of trauma histories, including youth residential, correctional, and alternative education treatment settings. Mental health workers of all types can benefit from an additional tool...
in their arsenal. The use of music in psychological treatment should not be considered a luxury or confined to children’s hospitals but integrated widely across settings as indicated.

There are several ways of integrating these included bodies of work on music-based interventions. In addition to using music in group and individual counseling settings for social and formative outcomes, music interventions such as performance, listening, analyzing, and songwriting can be used for trauma processing, self-expression, and discrete regulatory goals. Harkening back to Saarikallio’s (2008, 2012) work in musical affect regulation strategies each of PTSD’s four symptom clusters may be tied to specific musical strategies in emotion regulation: Diversion may be used in the beginning of treatment while safety is still being established in the service of addressing intrusion symptoms, as well as during any period of inability to experience positive emotions; Solace may be used as comfort during gradual, imaginal exposure and during intentional reduction of avoidance behaviors as well as a method of avoiding feeling detached or estranged from others or their own feelings; Discharge/Reduction of Negative Activation may be used to foster the safe release of anger or agitation seen in times of heightened arousal and reactivity.

An important step for practice involves more widely disseminating the knowledge, research, and training of these practices. Suggested policy changes include increased funding of federal grant programs such as the National Endow for the Arts which supports the scientistic investigation of music for psychological and physical health; further time and experience dedicated by academic programs to training music therapists in research methods, and more cohesive, collective advocacy efforts at the
national level by music therapists, music psychologists, physicians, and scientists for the covering and reimbursement of music interventions in Medicare which frequently influences policymaking in other private insurance carriers.

In her seminal work Music in Everyday Life, sociologist Tia DeNora (2004) describes:

Using music as a resource for creating and sustaining ontological security, and for entraining and modulating mood and levels of distress, is by no means unique to the purview of the professional music therapeutic encounter. In the course of daily life, many of us resort to music, often in highly reflexive ways. Building and deploying musical montages is part of a repertory of strategies for coping and for generating pleasure, creating occasion, and affirming self- and group identity. (p. 16)

Going forward, it is crucial for many to shift, and others to continue, describing their interventions and the connections between therapeutic aims and outcomes in such a way that they may be further examined, widely disseminated, and made available where indicated in the treatment of adolescent trauma.

**Limitations**

Due to the relatively limited amount of literature in the area, this project elected to include some comparably weak study methodologies. As discussed, it is important to consider the findings in this context. Further limitations are those inherent to any qualitative extraction and synthesis performed primarily by a single researcher, including reviewer bias and margin for error, as well as the inherent subjective nature of reporting on human behavior. However, efforts were made to minimize reviewer bias by
extensive double reviewing and comparisons by two research assistants as well as an individual who independently double coded and counted all inclusion and exclusion criteria for all studies.

Another study limitation was the lack of inclusion of racial, societal, or historical trauma. These critical areas of study should be explored with the strong possibility of identifying beneficial outcomes specific to music. The exclusion criteria further omitted a large number of participants that either included both children and adolescents or adolescents and adults, as well as music interventions used in tandem with other expressive arts modalities. The inclusion of either of these variables would result in a fuller database.

One of the largest limitations applicable to the mental health field in the context of trauma remains the previously discussed lack of diagnostic clarity or terminological consistency surrounding developmental, complex, and other types of complicated trauma (Bremness & Polzin, 2014; McLean, 2016). Without a cohesive diagnostic framework shared among health disciplines, replicability in studies will continue to suffer. Furthermore, the varying fields’ conflicting ideologies and convictions between the efficacy of the use of music interventions in medical, palliative, and mental health settings versus traditional music therapy continue to present challenges across dissemination of results and practice guidelines.

**Conclusion**

Instead of focusing predominantly on the distinction between passive and active interventions, intentionality may be key (DeNora, 2004; Saarikallio, 2020). Where many trauma survivors feel as if they've been robbed of their agency, affording them the
authorship, choice, and control in how to frame and work through their experience should be a priority. Identities are formed in adolescence, and for survivors of trauma, this is all the more critical. Future studies should continue to focus on the role of intentionality and agency in treating the effects of adolescent trauma. Furthermore, music should be placed in the hands of all clinicians, not just those practicing music therapy. A more thorough examination of the mechanisms of how music interventions work, in what setting, with longitudinal data, is needed. The field of psychology will benefit from improved coherence regarding the understanding of appropriate and efficacious musical interventions employed in the treatment of trauma, further identifying and applying equitable, non-invasive, and empirically supported treatments for adolescent trauma survivors.
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APPENDIX A

Evidence Base for Research Questions
<table>
<thead>
<tr>
<th>Authors and Year</th>
<th>Title</th>
<th>Research Methodology and Design</th>
<th>Results / Key Findings / Conclusion</th>
<th>Application / Critique / Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viega, M. (2018)</td>
<td>A humanistic understanding of the use of digital technology in therapeutic songwriting.</td>
<td>Theoretical</td>
<td>Digital music can reveal complex musical and lyrical narratives that speak to personal and cultural transformations of songwriters who have experienced deep trauma. Digital platforms provide songwriters new avenues to source for meaningful experiences, creating new possibilities and identities within those soundscapes and share them with the world. Participation in the string ensemble played a part in rehabilitation goals. Themes: (1) exposure and new experiences: youth moved from resistance to participation and success in the string program, (2) pride and recognition: youth described experiencing satisfaction in their success, realizing their potential to do something positive, receiving positive reinforcement from others, and making people they loved proud, (3) personal and interpersonal development: improved emotional release, behavior regulation, frustration tolerance, time management, communication skills and willingness to help others, and (4) collaborating to help youth (outcome observation specific to staff participants): string program contributed to the community effort of restorative justice.</td>
<td>Relational engagement with technology allows people who have been oppressed and marginalized to invent new identities, express and voice selfhood and become stakeholders in a global digital culture. Holistic impression of article was very strong.</td>
</tr>
<tr>
<td>Uhler, B. (2021)</td>
<td>Beyond the corner: Incorporating music into a juvenile detention center.</td>
<td>Empirical Qualitative</td>
<td>Strengths of the study include the centrality of a minority population and clear delineation of intervention outcomes. Relative weaknesses include a limited discussion of limitations, no discussion of future recommendations, relatively weak discussion of minorities, and small sample size. Great attention to restorative justice.</td>
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<tr>
<td>McFerran, K., Henne-C., Kokie, A., Rickwood, D. (2018)</td>
<td>Intentional music use to reduce ongoing, anecdotally distressing conditions associated with HIV/AIDS.</td>
<td>Mixed methods</td>
<td>Measurable decreases in distress demonstrated through a sense of (1) theme: personal agency and (2) theme: changes in uses of music after sessions. These findings corroborate previous investigations that suggest some young people unconsciously use music to intensify unhelpful states. The findings also suggest that engaging young people in contemplating their uses of music can lead to changes in their approach to music use.</td>
<td>More rigorously designed studies are needed to examine whether music was critical in contributing to the improved distress levels of the young people in this study, or whether any preferred media may be equally effective. In addition, it will be important to determine whether this approach can be utilized by a range of health professionals, or whether the specialized knowledge and trained personnel required to provide this service can be scaled to reach a larger audience.</td>
</tr>
<tr>
<td>Langdon, G. S. Margolis, F., Muenzennmaier, K. (2018)</td>
<td>Weaving words and music: Healing from trauma for people with serious mental illness.</td>
<td>Empirical Qualitative</td>
<td>Participants identified and created safety, built healthy relationships and maintained equilibrium while facing the challenges of their past traumatic experiences. Can help individuals reach healthy states achieved, increased capacity for self-regulation and tolerance of heightened affective states observed.</td>
<td>The collaboration of music and verbal therapies was found to be very valuable in the treatment of complex trauma. Music provides predictability, fosters community and supports self-expression. Music can also help with the experience of affect modulation, encouraging the music to become louder then return to a quieter place.</td>
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<tr>
<td>Turner, M. (2016)</td>
<td>Creative therapy in the treatment of trauma in adolescents.</td>
<td>Theoretical</td>
<td>Help expose “real, deep” feelings and aid facilitation of discussion. Currently, the treatment for adolescents with trauma is lacking the proper knowledge and motivation to cater to this population appropriately. The research to support the idea of incorporating alternative forms of treatment with adolescents, however, is accessible and emerging on the forefront of trauma. If clinicians had the support of mental health facilities to provide trainings and further education in these disciplines, they would be more well-rounded clinicians and more equipped to actually treat the client’s trauma. It is necessary to disseminate information about, and stand behind, creative therapies.</td>
<td>The collaboration of music and verbal therapies was found to be very valuable in the treatment of complex trauma. Music provides predictability, fosters community and supports self-expression. Music can also help with the experience of affect modulation, encouraging the music to become louder then return to a quieter place.</td>
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<tr>
<td>Armstrong, S., Ricard, R. (2018)</td>
<td>Integrating rap music into counseling with adolescents in a disciplinary alternative education program.</td>
<td>Theoretical</td>
<td>Music listeners find meaning and connect with lyrics and beats in a fluid, shifting dance of moods and emotions. Incorporating music into counseling provides an opportunity for counselors to join youth in a culturally meaningful experience. By acknowledging the importance of music, clinicians are able to enter into an adolescents world in ways that are not easily accessible to adults. Counselors can work to establish trust and rapport with adolescents as co-investigators and perhaps coauthors with respect to helping their clients cultivate new song lyrics for better personal outcomes.</td>
<td>Counselors should recognize and validate a multifaceted student connection with music. Through the use of this rap therapy-based intervention as a culturally sensitive technique, counselors can use rap music to positive refame the experiences rap music portrays to better reach clients. Overall very interesting work and seemingly strong interventions consisting of multiple opportunities for deep client processing. Good structure and organization of treatment. Great recognition and spotlighting existent theme of resiliency in rap music and using it to spur client growth.</td>
</tr>
<tr>
<td>Park, M. M. (2014)</td>
<td>The experience of music therapy among adolescents at a children’s hospital in the San Francisco Bay area: A qualitative exploration.</td>
<td>Empirical Qualitative</td>
<td>Identified themes: life is hard, life is hard in the hospital, excited to learn, authentic self, bringing people together, relationship with music therapist, power of lyrics, overcoming obstacles, music changes you, music helps. Music therapy was described by participants as helping to relieve and express their pain, anxiety, depression, loneliness and bond with their family. They also described how it increased their sense of competence and self esteem while instilling hope for the future.</td>
<td>Music therapy appears to be especially beneficial for adolescents who are struggling with forming an identity, especially in the midst of debilitating illness. The relationship with the music therapy appeared to be an important factor in helping these adolescents cope with their illness and life in the hospital. Good dissertation taking advantage of qualitative methods.</td>
</tr>
<tr>
<td>Magee, W. L., Baker, F., Davison, B., Holly, H., Kenneyly, J., Leung, M., Tampkin, J. (2011)</td>
<td>Music therapy methods with children, adolescents, and adults with severe neurobehavioral disorders due to brain injury.</td>
<td>Empirical Qualitative</td>
<td>Music therapy facilitated recall process, triggered patient's learned agitation de-escalation strategies. Fostered trust, increased tolerance towards social contact. Increased expression, increased eye contact when spoken to, increased relaxation observed. Reduced negative and inappropriate behaviors. Increased smiling and visual engagement.</td>
<td>Music therapy can minimize incidences of noncompliance for patients presenting with neurobehavioral sequelae of trauma. Providing an outlet for emotional expression allows patients to express unspoken outbursts to be expressed in a positive and creative manner. Fostering positive experiences for the patient will aid with skill acquisition and potential cognitive improvement. Good and unique overlap of psychological and neurological trauma factors through an international collaboration.</td>
</tr>
<tr>
<td>Keen, A. W. (2004)</td>
<td>Using Music as a Therapy Tool to Motivate Troubled Adolescents.</td>
<td>Mixed Methods</td>
<td>Interaction and self-expression was achieved. Subject expressed himself, anger and hurts, levels of tension and anxiety were reduced, defences were lowered and life tasks were attempted, more cooperative behaviors observed. The non-verbal aspects of music made it an excellent resource for reaching the adolescent and facilitating self-expression. Initial assessment using the CFS-NNR Prim assisted in identifying areas of concern and opened up the possibility of a previous traumatic incident. The music provided a relaxing, non-threatening environment where the subject was able to safely try new experiences that could then be transferred to other areas of her life. Within two sessions, subject was able to regard the adult therapist as a friend and important role model.</td>
<td>Music facilitated a cognitive engagement whilst reinforcing relaxation during &quot;reliving&quot; the traumatic event. &quot;Upon conclusion of the music, Tracey has been emotionally drained but has expressed feelings of warmth, safeness, closeness to family members, especially her mother, of being at peace within herself and a general sense of contentment.&quot; (p. 371) Music provided a constructive tool for the therapist to establish a therapeutic relationship, to facilitate interaction, self-awareness, and personal change within a relatively short period of time.</td>
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<td>Choi, C. M. H.</td>
<td>A pilot analysis of the psychological themes found during the CARING at Columbia—Music Therapy Program with refugee adolescents from North Korea.</td>
<td>Empirical Qualitative</td>
<td>Insights into current situations and positive views were gained, as well as better perceptions about the future. Repressed negative emotions were expressed in a constructive way. Communication with others in a positive manner was achieved. Reduced psychological symptoms and behavior problems. Resiliency factors achieved.</td>
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<tr>
<td>Kazancioglu, F. G. (2012)</td>
<td>An adolescent journey: Filling the void with sound.</td>
<td>Theoretical</td>
<td>Songs provided words to describe feelings, conflicts, fantasies and needs. Ability to make own interpretations of meanings of songs. Described sound as the chosen medium of therapeutic engagement. &quot;Music was a way to associate freely&quot; (2012, p. 228).</td>
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<tr>
<td>Plener, P. L., Sukale, T., Ludolph, A. G. Stegemann, T. (2010)</td>
<td>&quot;Stop cutting-rock!&quot;: A music therapeutic program for self-injuring adolescents.</td>
<td>Empirical Quantitative</td>
<td>4 of 5 participants did not injure themselves at the end of the program, and remained stable at the 2-month follow-up. Rates of depression declined. Participants responded least positively to the relaxation techniques. A blended treatment program of MT and elements of DBT-A for adolescent NSSI seems to be feasible in an outpatient setting. Results from our own questionnaire study on music and autoaggression in adolescents (Stegemann et al., 2009) indicate that music may fulfill similar functions as NSSI in this age group, such as affect regulation and disassociation, through the interpersonal aspects of music and lyrics (p. 60).</td>
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<tr>
<td>Cooper, A. L. (2012)</td>
<td>When the lullaby is missing: Healing from an infancy in foster care.</td>
<td>Empirical Qualitative</td>
<td>Music allowed patient to become calm before processing intense emotional states, helped on neurological processing. Meditative and sound healing practices proved calming to participants and improved their relationship with others.</td>
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<tr>
<td>Gooding, L. F. (2011)</td>
<td>The effect of a music therapy-based social skills training program on social competence in children and adolescents with social skills deficits.</td>
<td>Empirical Quantitative</td>
<td>Music therapy-based social skills interventions have the potential to be effective in addressing a wide range of social skills deficits. Active interventions appear to be effective in producing positive change in social functioning. Music-based interventions in group format implemented in conjunction with CBT appear to be effective in addressing social skills deficits.</td>
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<tr>
<td>Zanders, M. L. (2012)</td>
<td>The musical and personal biographies of adolescents with foster care experience.</td>
<td>Empirical Qualitative</td>
<td>Foster care experiences have various impacts on adolescents relationships to music. Involvement in active music-making activities tended to decrease as they moved from one placement to another. Placement movement did not seem to decrease the participants' access to recorded music and/or affect their music listening habits. Music appeared to influence adolescents' experiences of foster care. Participants who described positive or healthy relationships with their foster care families tended to be more involved in formal and active music-making activities such as school music programs, participation in music groups, or music lessons. All participants indicated that they spent a significant amount of time listening to music and did so for personal and psychological reasons. Music listening helped adolescents cope with the ongoing trauma, grief, and loss that they encountered throughout their lives. Active and formal music involvement appeared to be associated with a positive foster care placement.</td>
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<tr>
<td>Foran, L.M. (2008)</td>
<td>Listening to music: helping children regulate their emotions and improve learning in the classroom.</td>
<td>Theoretical</td>
<td>Students who suffer from PTSD/trauma have difficulty with emotional regulation. Study asserted it becomes the responsibility of the teacher to provide a space where they can utilize music to learn to more effectively regulate their emotions. Argued music supports traumatized youth by helping managing their emotions, activate brain pathways, and learn and integrate new cognitive and emotional information.</td>
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MT helped subjects learn to interact with each other, understand each other's situations by sharing their values, thoughts and past experiences. MT succeeded as an intervention to stop the cycle of negative coping styles and its consequences by teaching productive coping strategies (problem-solving, interpersonal skills, and relaxation techniques) through the program's psychoeducational themes. "Several psychological symptoms have improved during this program due to the innate characteristics of music therapy activities" (p. 402). This failure to report specific outcomes is problematic and representative of the challenges facing measuring arts outcomes in a reliable and replicable manner. Through music integration, therapist learned about subject's internal world through songs that brought subject to sessions. Uses "auralistic defense" to go beyond the definition of autism and include "an emotional level of appreciation of this defensive state, with all its pains and loneliness" (Kazancioglu, 2012, p. 214). Strong study in the context of case analysis with detailed descriptions of the client's use of sound as the "medium of engagement" (p. 215). Where the commentary is extremely rich, the article may be less practically useful in more time-limited or structured formats. Useful nevertheless for an analytic and less Western-centric perspective. Very interesting to note that the participants remained stable at the 2 month follow up, consistent with research showing that generalizable skills, and here relevantly music therapy skills in affect regulation are highly useful for individuals who self-injure (akin to MT research showing that it's more beneficial to teach them the skills as opposed to simply meeting for half an hour once a week). Study provides example of how music works as a kind of "diagnostic tool" to assess patients emotional intelligence, ability to self-regulate, and make use of positive relational support. "Neurological processing" is not well-defined within study. Subjectively, study includes an oversimplification of neural processes, brain function, and functional neuroimaging in relation to music. It is important to note though useful and at times perhaps essential to discuss the neuroscience of music therapy, it is further important to do so within the scope of understanding, training, and knowledge, posing a firm distinction between the assertions of fact and subjective commentary. Study nevertheless includes an important detailing of the more subjective healing impacts of music on a highly marginalized population (foster youth). Critique: "Music therapy" groups conducted by non-music therapist somewhat weakens the methodology and fidelity. Although positive outcomes were found in all three settings, in the realm of combating social skills deficits, a lack of agreement among the dependent measurements indicates that further research is warranted to determine the true effectiveness of the music therapy-based curriculum. The results of the current investigation, however, show potential for the general use of music therapy in tandem with cognitive behavioral interventions to ameliorate social skills deficits, as well as support for the use of a music therapy-based curriculum specifically targeting impaired social functioning. As a result of conducting this study, the primary investigator (music therapist) found attachment theory is particularly relevant not only for the field of foster care, but also for music therapy practice in this context (Ainsworth, 1969). Music therapists would benefit from increased understanding of attachment theories within the context of music therapy practice with foster care youth. Noteworthy study attending to non-music therapy interventions used by and often far more available to foster youth than traditional music therapy.
<table>
<thead>
<tr>
<th>Authors and Year</th>
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<tr>
<td>Cheng, A., Manfredi, R., Sadatolo, G., Goyal, M. (2017)</td>
<td>Adolescent Coping Strategies in the Emergency Department.</td>
<td>Empirical quantitative</td>
<td>Adolescents use music to deal with stress and feel safe in the emergency department. As music can be an effective tool in coping with anxiety, the continued provision of iPods, docks, chargers, and headphones should be provided in emergency departments.</td>
<td>Very strong and comparable unique breakdown and discussion of participant demographic characteristics. Study found listening to music was the most used and preferred coping skill in the ED, and argued 'internally focused coping methods' have been linked to social withdrawal and therefore may not be the most beneficial or effective of strategies. I would argue that in acute distress, a healthy coping mechanism like music is far better than unhealthy coping (e.g., further raised physiological arousal and distress, acting out or otherwise putting oneself at higher health risk, etc.).</td>
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<tr>
<td>Haase J. E.; Robb, S. L., Burns, D. S., Stegenga, K., Cherven, B., Hendricks- Ferguson, V., Roll, L. (2020)</td>
<td>Adolescent/Young Adult Perspectives of a Therapeutic Music Video Intervention to Improve Resilience During Hematopoietic Stem Cell Transplant for Cancer.</td>
<td>Empirical Qualitative</td>
<td>Helped participants focus less on transplant and cope more healthily with traumatic procedure through therapeutic music video intervention (TMV). Major takeaways: TMV facilitated a way to “work through and derive meaning from their experiences” (p. 29).</td>
<td>Music therapy allowed the adolescents to express their experience and be understood and supported effectively. One of three studies included examining the use of a therapeutic music video intervention delivered in healthcare settings by music therapists. Phenomenological analysis lent a marked depth to not only understanding the outcomes but the potential mechanisms of action to bring about significant change. Great discussion of limitations. Study 3/3 of the therapeutic music video intervention. Further important to note authors recognized that intervention can be taxing on very ill populations given the active component, and passive interventions such as music listening may be more appropriate depending on their stage of the illness.</td>
</tr>
<tr>
<td>Bittman, B., Dickson, L., Coddington, K. (2009)</td>
<td>Creative musical expression as a catalyst for quality-of-life improvement in inner-city adolescents placed in a court-referred residential treatment program</td>
<td>Empirical Qualitative</td>
<td>Improvement in role performance, depression, negative effect, self-evaluation, and anger. Statistically significant decrease in self-harm.</td>
<td>Creative musical expression and a safe environment allows adolescents to gain better emotional regulation. Incredibly strong study methodologically, especially comparatively. Study further provides in-depth descriptions of interventions (types, delivery mechanisms, length, etc.) which lends to the ability to compare and contrast both within and outside primarily drum-based music interventions.</td>
</tr>
<tr>
<td>Srinivasa, E. (2021)</td>
<td>The Limits of Resilience and the Need for Resilience: Articulating the Role of Music Therapy With Young People Within a Shifting Trauma Paradigm.</td>
<td>Theoretical</td>
<td>Music therapists should actively challenge discourse of risk and not foster resistance/structuring safety within the therapeutic space. Challenges the dominant trauma paradigm of “assigning vulnerability” and requiring the individual to accept responsibility for resilience by outlining potential alternatives within music therapy. Shows how music therapy can not only attend to but respond to power relations in existent trauma-informed spaces. Used music as means to explore peer relationships “in the context of gender and power” (p. 7).</td>
<td>Extremely strong study from a decolonial, indigenous, and critical feminist perspective. Article notably challenges assumption of “safe spaces” in favor of a more progressive shift toward the idea of “structuring safety” (Srinivasa, 2021, p. 1). Exemplary and forerunning work rethinking “trauma-informed” to “violence informed.”</td>
</tr>
<tr>
<td>Burns, D. S., Robb, S. L., Haase, J. E. (2009)</td>
<td>Exploring the feasibility of a therapeutic music video intervention in adolescents and young adults during stem-cell transplantation.</td>
<td>Empirical Qualitative</td>
<td>Therapeutic Music Video treatment had higher rates of engagement and participants assigned to this group had lower rates of dropout and showed improvement in certain areas, but the control group also showed improvement in other areas.</td>
<td>Article concluded more research was needed to determine feasibility of music therapy in assisting this population. As the control group also showed some improvement, outcomes of treatment not totally clear. Study 1/3 of the therapeutic music video intervention.</td>
</tr>
<tr>
<td>Yuki, T., Hiroaki, K., Hisa-aki, M., Murakami, C., Furuhara, K., Okuno, M., Takahashi, M., Fuji, D., Higashida, H. (2017)</td>
<td>Salivary Oxytocin Concentration Changes during a Group Drumming Intervention for Maltreated School Children.</td>
<td>Empirical Qualitative</td>
<td>Oxytocin levels differed significantly between pre and post measures. Differences were also noted between free play and rectal measures. Higher rates of oxytocin levels translated to participation and more appropriate behaviors.</td>
<td>Important and noteworthy step to recognize efficacy is often not established at a biological level. Informed discussion of hormonal breakdowns and factors associated with social memory and communication. Important addressing of reactive attachment disorder in Japanese youth populations. Recommendation for future research included a bigger participant pool and further addressing of behavioral changes. Overall very strong discussion of the neuroendocrine and neuroimmune impacts of stress and trauma on the body, and a potential intervention modulating away from these inflammatory biological states.</td>
</tr>
<tr>
<td>Weiss, C., Benaim, M. (2019)</td>
<td>Group music therapy with uprooted teenagers: The importance of structure.</td>
<td>Mixed Methods</td>
<td>Upon starting the program, participants’ familial, patroitic and religious beliefs were threatened following the uprooting. Expressing pain through structured musical activities helped the participants confront the pain of uprooting from within a safe place. Participants gain music as a tool for dealing with their crises both within and outside the group.</td>
<td>Two components of the therapy program that benefitted them were a combination of the ritualistic and nonverbal communication aspects. The predictability and symbolic nature of the sessions may have contributed to clients feeling a sense of safety. Being able to express themselves through music allowed them to communicate and release feelings that they had difficulty verbalising. Great discussion of study limitations.</td>
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<tr>
<td>Clark, B. A., Holstii, L., Siden, H. (2017)</td>
<td>Pediatric Palliative Music Therapy: Pain, Distress, and Contention in Children With Developmental Delays Associated With Life-Threatening Severe Neurological Impairment.</td>
<td>Mixed Methods</td>
<td>Jocelyn (13): Showed signs of contentment in both live music and vibroacoustic interventions. Displayed signs of contentment between seizures during vibroacoustic intervention. After seizures subsided, he showed continued contentment during and post intervention. Hayden (13): He experienced painful muscle spasms during vibroacoustic yet still showed signs of contentment. Possibly influenced by assistance of aides during intervention. Showed an increase in smiling and laughing throughout live music intervention.</td>
<td>Jocelyn and Kevin's displays of contentment were consistent with the majority of subjects in the sample. Live music tended to elicit a more relaxed and subtle response from participants, while vibroacoustic saw more active displays of contentment such as smiling and laughing. It is likely that Hayden's responses during the interventions were confounded by him showing high symptoms on the day of vibroacoustic and low symptoms on day of live music. He was the only one to smile and laugh during both interventions and the only one who laughed during live music. Overall, the case studies showed positive correlations but were inconclusive due to several confounding variables. Evidence might be considered positive but anecdotal. Outcomes not clear.</td>
</tr>
<tr>
<td>Benson, M. (2020)</td>
<td>Perceptions of music therapists regarding their work with children living under continuous war threat: Experiential reframing of trauma through songs.</td>
<td>Empirical Qualitative</td>
<td>Three themes emerged: Creating a playful and joyful space; re-experiencing trauma in a fun way; makes it less threatening Restoring a sense of control by actively controlling elements of song. Adolescents move from passivity and helplessness to showing initiative. Fostering resilience: music therapy gives adolescent ability to better cope with trauma, particularly through song that represented trauma that also convey messages of strength and agency.</td>
<td>Experiential reframing of trauma through songs (ERTS): findings of study developed into theoretical framework to guide therapeutic use of songs with children experiencing continuous trauma. “According to this proposed theory, the use of songs in music therapy enables children to re-experience the fear of the trauma within a playful, controlled, and resilient space thus reframing the traumatic memory to be a less threatening event” (p. 310). Important recognition and discussion of limitations.</td>
</tr>
<tr>
<td>Faulkner, S. (2017)</td>
<td>Rhythm2Recovery: A Model of Practice Combining Rhythmic Music with Cognitive Reflection for Social and Emotional Health within Trauma Recovery.</td>
<td>Theoretical</td>
<td>Music has the ability to engage those who might be initially less receptive to traditional therapy techniques. Study asserts neuroscience shows traumatic experiences can impact brain areas that might limit the effectiveness of talk therapies. Music allows clients to express their emotions. Music in group settings allows the client to form relationships and socialize in a safe environment. Study purports supporting research showing drumming can improve wellbeing and reduce psychological distress.</td>
<td>Interesting paper highlighting alternative and engaging method for those less receptive to therapy. Great discussion and response to limitations of GBT for people of Aboriginal descent. Notes importance of access and engagement through percussive instruments for those without a background in music.</td>
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<tr>
<td>Palitoksky, M., Stolbach, B. C. (2011)</td>
<td>Dramatic Healing: The Evolution of a Trauma-Informed Musical Theatre Program for Incarcerated Girls.</td>
<td>Empirical Qualitative</td>
<td>The program emulates other trauma interventions by helping accomplish similar goals such as forming safe relationships, fostering emotional self-reflection, understanding how trauma affects them in the present, creating a trauma narrative, collaborating with others, and giving them hope for the future. It is possible some success of the program could be due to it not being run by justice system staff, voluntary participation, community creation, shared trauma experiences, the act of creating something for people, and the intervention seen as fun and enjoyable by participants as opposed to other aspects of their stay. Discusses limitations of study due to self-described “anecdotal evidence.”</td>
<td>Whereas the study found music and the hero’s journey to be a vital tool for assessing developmental and psychological status of the client, the outcomes are limited by small sample size and more research is needed. Fascinating assessment tool nevertheless.</td>
</tr>
<tr>
<td>Vega, M. (2017)</td>
<td>From Orphan to Sage: The Hero’s Journey as an Assessment Tool for Hip Hop Songs Created in Music Therapy.</td>
<td>Theoretical</td>
<td>Analysed 3 songs from 3 patients: Stage: separation, call to adventure Song 1: Archetype: Orphan = regaining safety Stage: The Betyl of the Whale Song 2: Archetype: Destroyer - metamorphosis Stage: return phase Song 3: Archetype: Magician - transform into new reality</td>
<td>One of the great strengths of this study comes in its brief discussion of limitations: the author acknowledges many counselors working in schools may not have access to the resources he did (music instruments). In such cases, he offers clear suggestions of suitable and possible equitable alternatives.</td>
</tr>
<tr>
<td>Davis, K. M. (2010)</td>
<td>Music and the Expressive Arts With Children Experiencing Trauma.</td>
<td>Empirical Qualitative</td>
<td>Group music therapy allowed participants to voice their feelings and use the facets of the music to better understand their emotions. Music therapy can be beneficial to children in processing complicated emotions and bridging the gap of children being able to communicate with their parents/family. Theoretical view with no discussion of limitations but strong attention to cultural considerations, both within the populations of interest and within the intervention itself, which may be unique.</td>
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<tr>
<td>Faulkner, S. (2011)</td>
<td>DRUMBEAT: In search of belonging.</td>
<td>Theoretical</td>
<td>Program is meant to help adolescents feel a sense of community and encourage communication about problematic feelings/behaviors. Individuals that participated found improved levels of mood and reductions in feelings of anxiety. Writing, performing, and producing musical theatre helps incarcerated girls make connections between past trauma and later negative choices leading to more positive choices and outcomes. Girls gain the ability to recall past traumas, process emotions, and transfer their trauma into music.</td>
<td>Theoretical view with no discussion of limitations but strong attention to cultural considerations, both within the populations of interest and within the intervention itself, which may be unique.</td>
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<td>Palidofsky, M. (2010)</td>
<td>If I Cry for You, ... Turning unspoken trauma into song and musical theatre.</td>
<td>Theoretical</td>
<td>Music therapy program stimulated growth and improved social skills. Instead of focusing on a narrow range of trauma symptoms, the protocol is successful in addressing ‘core relational capacities’ inherent to forming and navigating safe interpersonal attachments. Includes a strong behavioral component (i.e., token economy and reinforcement) as well as a heavy emphasis on goal-making.</td>
<td>This type of intervention provides a feasible way for youth to engage and work on meaningful interaction, healthy relationships, and attachments. Very important alleviation of the problems youth in residential treatment face as well as some reasons why traditional talk therapy alone is often ineffective with high traumatized adolescents. Further helpful delineation of the types of trauma the youth experienced. Great detailing of therapeutic applications and intervention descriptions. Notably, this protocol was designed for youth with an average IQ of approximately 85. Overall strong attention to culture and diversity.</td>
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<td>Hussey, D. L., Reed, A. M., Layman, D. L., Piasali, V. (2006)</td>
<td>Music Therapy and Complex Trauma: A Protocol for Developing Social Reciprocity.</td>
<td>Theoretical</td>
<td>Music therapy program stimulated growth and improved social skills. Instead of focusing on a narrow range of trauma symptoms, the protocol is successful in addressing ‘core relational capacities’ inherent to forming and navigating safe interpersonal attachments. Includes a strong behavioral component (i.e., token economy and reinforcement) as well as a heavy emphasis on goal-making.</td>
<td>This type of intervention provides a feasible way for youth to engage and work on meaningful interaction, healthy relationships, and attachments. Very important alleviation of the problems youth in residential treatment face as well as some reasons why traditional talk therapy alone is often ineffective with high traumatized adolescents. Further helpful delineation of the types of trauma the youth experienced. Great detailing of therapeutic applications and intervention descriptions. Notably, this protocol was designed for youth with an average IQ of approximately 85. Overall strong attention to culture and diversity.</td>
</tr>
<tr>
<td>O'Callaghan, C.; Sexton, M.; Wheeler, G. (2007)</td>
<td>Music therapy as a non-pharmacological adjuvant for paediatric radiotherapy patients.</td>
<td>Empirical Qualitative</td>
<td>Reduced perception of pain, reduced stress, fears and anxiety; improved affective state, improved morale, opened communication; reduced need for medication; improved adjustment to adverse hospital experiences, cathartic musical experiences.</td>
<td>Very interesting model of deeply integrating MT into ‘primary’ care. Like many others, study is weakened by significant confounds (i.e., benefits were perceived after simultaneous application of music therapy and radiation). This stated, a particular strength of this intervention was allowing a participant to borrow the hospital piano keyboard - in this way, effects were not confined to a typical brief MT session but allowed to generalize into other settings.</td>
</tr>
<tr>
<td>Authors and Year</td>
<td>Title</td>
<td>Research Methodology and Design</td>
<td>Results / Key Findings / Conclusion</td>
<td>Application / Critique / Commentary</td>
</tr>
<tr>
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</tr>
<tr>
<td>Warner, C., Stachyra, K., Zarotti, B. (2018)</td>
<td>Learning in a new key: an Erasmus+ project developing therapeutic music resources for children affected by trauma.</td>
<td>Theoretical</td>
<td>Music and arts based therapies can offer teachers a valuable resource to dealing with challenging emotional states or past traumas.</td>
<td>Article mentions a helpful effect pertinent to traumatized youth (i.e., the music activities can function to slow them down (emotions/feelings) down), as well as enhancing feelings of safety, creating positive attachments, both they argue are necessary precursors for effective and meaningful learning. Overall, review provides a very strong critical examination of the collaboration between music therapists, educators, and researchers (implemented by teachers). Great example of cross-disciplinary research with a highly-positive outcome.</td>
</tr>
<tr>
<td>Kinney, A. (2012)</td>
<td>Loops, Lyrics, and Literacy: Songwriting as a Site of Resilience for an Urban Adolescent.</td>
<td>Empirical Qualitative</td>
<td>Songwriting successfully served as a point of resilience for Christopher, as well as a way to navigate difficult circumstances. Study reports that rather than resorting to violence, he successfully managed his emotions through songwriting.</td>
<td>Creative outlets can serve as a way to navigate emotions and in turn build resilience. Despite a relatively weaker methodology, good attenuation to impact of racism and microaggressions on people of color and low socioeconomic status, as well as specific facets of adversity, including racial and class bias, poverty, and societal and institutional forces. Author asserts that where youth may not always feel comfortable sharing related emotions and experiences in the classroom setting, integrating songwriting (for example) might provide a space and haven to do so. Author makes a very important link and tie to just how songwriting could be integrated: allotted class time for journaling, within a poetry module, or using music to teach content analysis in a language arts course.</td>
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</tbody>
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APPENDIX B

Overview of Included Studies
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<tbody>
<tr>
<td>Viega, M. (2018)</td>
<td>Music Therapy setting</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>Active</td>
<td>Music Therapy</td>
<td>self-expression, identity development</td>
<td>none reported</td>
</tr>
<tr>
<td>Uhler, B. (2021)</td>
<td>Juvenile Detention Center: Chatham Youth Development Center</td>
<td>8</td>
<td>Caucasian - 25% (2) African American - 62.5% (5) Hispanic - 12.5% (1)</td>
<td>Female - 62.5% (5) Male - 37.5% (3)</td>
<td>Active</td>
<td>Music performance</td>
<td>pride, participation, frustration tolerance, behavioral regulation, emotional release, communication skills, willingness to help others</td>
<td>resistance</td>
</tr>
<tr>
<td>Turner, M. (2016)</td>
<td>Therapy</td>
<td>5</td>
<td>Caucasian European</td>
<td>Female - 100% (5)</td>
<td>Passive</td>
<td>Listening to music</td>
<td>emotional expression</td>
<td>none reported</td>
</tr>
<tr>
<td>Armstrong, S., Ricard, R. (2016)</td>
<td>Disciplinary alternative education program</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>Passive</td>
<td>Integrating rap music</td>
<td>reframe traumatic experiences</td>
<td>none reported</td>
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<tr>
<td>Park, M. M. (2014)</td>
<td>Children’s hospital</td>
<td>10</td>
<td>African American - 40% (4) Latino - 30% (3) Unspecified - 20% (2) Multiracial - 10% (1)</td>
<td>Female - 50% (5) Male - 50% (5)</td>
<td>Active</td>
<td>Music Therapy</td>
<td>identity formation, coping, self-expression, sense of competency, self-esteem, hope, family bonding, cognitive processing, memory, mood</td>
<td>anxiety, depression, loneliness, pain levels</td>
</tr>
<tr>
<td>Keen, A. W. (2004)</td>
<td>Private practice</td>
<td>1</td>
<td>Unspecified South African - 100% (1)</td>
<td>Female - 100% (1)</td>
<td>Passive</td>
<td>Listening to music, Progressive Muscular Relaxation (PMR) accompanied by music, cognitive conditioning, used in reliving traumatic event</td>
<td>self awareness, self-expression, trust of therapist and therapeutic relationship</td>
<td>tension, anxiety</td>
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<tr>
<td>Choi, C. M. H.</td>
<td>Alternative school for refugee adolescents from North Korea</td>
<td>9</td>
<td>Korean Unspecified</td>
<td>Female - 44.4% (4) Male - 55.6% (5)</td>
<td>Active and passive</td>
<td>Music Therapy</td>
<td>problem solving, interpersonal skills, relaxation, coping skills, healthy communication</td>
<td>negative coping strategies, behavioral problems, repressing emotions</td>
</tr>
<tr>
<td>(2010)</td>
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<tr>
<td>Kazancıoğlu, F.</td>
<td>Private practice</td>
<td>1</td>
<td>Unspecified</td>
<td>Female - 100% (1)</td>
<td>Passive</td>
<td>Listening to music</td>
<td>self reflection, self-expression</td>
<td>none reported</td>
</tr>
<tr>
<td>G. (2012)</td>
<td></td>
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<tr>
<td>Plener, P. L.,</td>
<td>Specialized music therapy facility; Department of Child and Adolescent</td>
<td>5</td>
<td>Unspecified</td>
<td>Female - 100% (5)</td>
<td>Active and Passive</td>
<td>Music Therapy + DBT</td>
<td>stability, affect regulation</td>
<td>self-injury, depressive symptoms, dissociation</td>
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<tr>
<td>Sukale, T.,</td>
<td>Psychiatry and Psychotherapy at the University of Ulm.</td>
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<td></td>
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<tr>
<td>Ludolph, A. G.</td>
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<tr>
<td>Stegemann, T.</td>
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<tr>
<td>(2010)</td>
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</tr>
<tr>
<td>Cooper, A. L.</td>
<td>Private practice</td>
<td>1</td>
<td>Unspecified</td>
<td>Female - 100% (1)</td>
<td>Passive</td>
<td>Listening to music</td>
<td>neurological processing, emotional processing, self-regulation</td>
<td>none reported</td>
</tr>
<tr>
<td>(2012)</td>
<td></td>
<td></td>
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<tr>
<td>Gooding, L. F.</td>
<td>Educational setting, residential treatment program and inner-city after-school</td>
<td>44</td>
<td>Unspecified</td>
<td>Female - 45.45% (20) Male - 54.55% (24)</td>
<td>Active</td>
<td>Music therapy-based social skills training: Music performance, listening to music,</td>
<td>social functioning</td>
<td>social skills deficits (in conjunction with group format CBT)</td>
</tr>
<tr>
<td>(2011)</td>
<td>care program</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>analyzing lyrics, creating music, &quot;cognitive behavioral techniques&quot;</td>
<td></td>
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<tr>
<td>Zanders, M. L.</td>
<td>Outpatient clinic</td>
<td>10</td>
<td>Unspecified</td>
<td>Female - 40% (4) Male - 60% (6)</td>
<td>Active and passive</td>
<td>Music listening as a psychological resource</td>
<td>coping with trauma, grief, and loss, relaxation, self-regulation, socialization, identity</td>
<td>distress</td>
</tr>
<tr>
<td>(2012)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>formation</td>
<td></td>
</tr>
<tr>
<td>Foran, L. M.</td>
<td>School classroom</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>Active and Passive</td>
<td>Listening to music, Classroom reading with music and movement</td>
<td>emotion regulation</td>
<td>none reported</td>
</tr>
<tr>
<td>(2009)</td>
<td></td>
<td></td>
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<tr>
<td>Cheng, A.,</td>
<td>Emergency Department</td>
<td>80</td>
<td>African American - 61.25% (49) Latino/Hispanic - 18.75% (15)</td>
<td>Female - 75% (60) Male - 25% (20)</td>
<td>Passive</td>
<td>Listening to music</td>
<td>sense of safety</td>
<td>anxiety</td>
</tr>
<tr>
<td>Manfredi, R.,</td>
<td></td>
<td></td>
<td>Caucasian 10% (8)</td>
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<tr>
<td>Badolato, G.,</td>
<td></td>
<td></td>
<td>&quot;Other&quot; - 10% (8)</td>
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<tr>
<td>Haase J. E.; Robb, S. L., Burns, D. S., Stegenga, K., Cherwen, B., Hendricks-Ferguson, V., Roll, L. (2020)</td>
<td>Hospital</td>
<td>14</td>
<td>Caucasian - 79% (11) African American - 7% (1) Biracial/other - 14% (2)</td>
<td>Female - 28.6% (4) Male - 71.4% (10)</td>
<td>Active</td>
<td>Music Therapy (Music video)</td>
<td>self-expression, coping, meaningful connection, social support, family function, meaning making, reframing trauma, hope-derived meaning, mood</td>
<td>distress</td>
</tr>
<tr>
<td>Bittman, B., Dickson, L., Coddington, K. (2008)</td>
<td>Group Home</td>
<td>52</td>
<td>African American Asian Caucasian Puerto Rican</td>
<td>Female - 57.7% (30) Male - 42.3% (22)</td>
<td>Active</td>
<td>Group music HealthRHYTHMS drumming protocol</td>
<td>emotion regulation, sense of safety, school/work performance</td>
<td>depression, negative affect, negative self-evaluation, anger, self-harm</td>
</tr>
<tr>
<td>Scrine, E. (2021) College in Australia (age 13-14)</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>Active</td>
<td>Music Therapy</td>
<td>political agency, resistance to systemic oppression and violence</td>
<td>identity-based vulnerability</td>
<td></td>
</tr>
<tr>
<td>Burns, D. S., Robb, S. L., Haase, J. E. (2008)</td>
<td>Hospital</td>
<td>12</td>
<td>Caucasian - 100% (12)</td>
<td>Female - 41.7% (5) Male - 58.3% (7)</td>
<td>Active</td>
<td>Music Therapy (Music video)</td>
<td>engagement, but outcomes not clear</td>
<td>none reported</td>
</tr>
<tr>
<td>Robb, S. L., Burns, D. S., Stegenga, K. A., Haut, P. R., Monahan, P. O., Moza, J., Stump, T. E., Cherwen, B. O., Docherty, S. L., Hendricks-Ferguson, V. L., Kintner, E. K., Haight, A. E., Wall, D. A., Haase, J. E. (2014)</td>
<td>Hospital/Oncology departments</td>
<td>113</td>
<td>Hispanic - 16.8% (19) African American - 10.6% (12) Caucasian - 58.4% (66) Biracial - 20.4% (23) &quot;Other&quot; - 6.2% (7) Unknown - 4.4% (5)</td>
<td>Female - 42.5% (48) Male - 57.5% (65)</td>
<td>Active</td>
<td>Music Therapy (Music video)</td>
<td>health outcomes, coping, social integration</td>
<td>distress (non-significant effect)</td>
</tr>
<tr>
<td>Weiss, C., Bensimon, M. (2019)</td>
<td>Participants' community</td>
<td>6</td>
<td>Israeli - 100% (6)</td>
<td>Female - 100% (6)</td>
<td>Active</td>
<td>Music Therapy</td>
<td>sense of safety, self-expression, emotional release</td>
<td>negative mood</td>
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<tr>
<td>Bensimon, M. (2020)</td>
<td>Music Therapy; Participants’ Home/workplace; children who experience continuous war threat in towns located near the Gaza Strip.</td>
<td>15</td>
<td>Israeli - 100% (15)</td>
<td>Unspecified</td>
<td>Active</td>
<td>Music Therapy</td>
<td>sense of control, resilience, reframing of trauma, personal agency, affect regulation</td>
<td>none reported</td>
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<tr>
<td>Faulkner, S. (2017)</td>
<td>(&quot;Behavourial centres for young people, at risk to refugee trauma centres, forensic psychiatric wards in prisons, and child and adult mental health services&quot;)</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>Active</td>
<td>Drumming + CBT</td>
<td>reframing of trauma, engagement</td>
<td>psychological distress</td>
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<tr>
<td>Palidofsky, M., Stolbach, B. C. (2011)</td>
<td>Youth Prison</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Female - 100%</td>
<td>Active</td>
<td>Musical Theatre: Fabulous Females</td>
<td>emotion regulation, creating trauma narrative, hope</td>
<td>none reported</td>
</tr>
<tr>
<td>Viega, M. (2017)</td>
<td>Therapeutic songwriting program</td>
<td>3</td>
<td>Black - 100% (3)</td>
<td>Male - 33% (1) Female - 67% (2)</td>
<td>Active</td>
<td>Music Therapy (specifically assessment, songwriting)</td>
<td>sense of safety, self-expression</td>
<td>none reported</td>
</tr>
<tr>
<td>Davis, K. M. (2010)</td>
<td>Elementary school</td>
<td>60</td>
<td>Caucasian and Latino (Unspecified amount)</td>
<td>Unspecified</td>
<td>Active</td>
<td>Group counseling with music</td>
<td>communication, understanding their emotions, emotional processing</td>
<td>none reported</td>
</tr>
<tr>
<td>Faulkner, S. (2011)</td>
<td>University of Western Australia's School of Population and Health including prisons, refugee trauma associations, child protection residential, drug and alcohol rehab, and schools</td>
<td>190</td>
<td>Aboriginal (Australia and New Zealand) - 30% (57) Unspecified - 70% (133)</td>
<td>Unspecified</td>
<td>Active</td>
<td>Drumbeat program (combines experiential learning with CBT)</td>
<td>mood, emotional control, self-esteem, relationships with peers and teachers</td>
<td>anxiety, social isolation, behavioral incidents (suspensions)</td>
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<tr>
<td>Palidofsky, M. (2010)</td>
<td>Youth Center (locked state residence for convicted girls)</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Female - 100%</td>
<td>Active</td>
<td>Musical Theatre: Fabulous Females</td>
<td>emotional processing, ability to recall past trauma, reframing of trauma</td>
<td>none reported</td>
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<tr>
<td>Kinney, A. (2012)</td>
<td>After School Center for Teens: Music Resource Center</td>
<td>1</td>
<td>African American - 100% (1)</td>
<td>Make - 100% (1)</td>
<td>Active</td>
<td>Songwriting</td>
<td>resilience</td>
<td>none reported</td>
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Table References


https://www.musictherapy.org/about/history/.


https://doi.org/10.1080/15401383.2016.1214656


10.1097/NCC.0b013e3181a4802c. PMID: 19661790.


10.1097/PEC.0000000000001384.


https://doi-org.lib.pepperdine.edu/10.1002/anzf.1268

https://www.jstor.org/stable/42923786


https://doi-org.lib.pepperdine.edu/10.1093/jmt/thz014

https://doi-org.lib.pepperdine.edu/10.1080/08865710802147547

https://doi-org.lib.pepperdine.edu/10.1080/15551024.2012.656352


https://doi-org.lib.pepperdine.edu/10.1386/ijcm.3.1.121/7

https://doi-org.lib.pepperdine.edu/10.1080/19361521.2012.697102


https://doi-org.lib.pepperdine.edu/10.1177/1943862109356928

https://doi-org.lib.pepperdine.edu/10.1002/cncr.28355


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<th>Type of Search</th>
<th>Database/Source</th>
<th>Search Syntax</th>
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</table>
| 12/1/20     | Electronic Database | psycINFO | music* OR "music interventions" OR "music medicine"
AND trauma* OR "natural disasters" OR "sexual assault" OR "family separation" OR "sexual violence" OR "intimate partner violence" OR "distress" OR "complex trauma" OR "hate crime" OR "school shooting" OR "suicide" "self-injury" OR "self-harm" OR "human trafficking" OR "sex trafficking" OR "child abuse" OR "child neglect"
AND Adolescent* OR Child* OR Youth OR Teen* OR "young people"
NOT "art therapy" OR "art psychotherapy" OR "creative arts therapies" OR "dance therapy" |
| 3/20/21     | Electronic Database | ProQuest: PTSDPubs | music* OR "music interventions" OR "music medicine"
AND trauma* OR "natural disasters" OR "sexual assault" OR "family separation" OR "sexual violence" OR "intimate partner violence" OR "distress" OR "complex trauma" OR "hate crime" OR "school shooting" OR "suicide" "self-injury" OR "self-harm" OR "human trafficking" OR "sex trafficking" OR "child abuse" OR "child neglect"
AND Adolescent* OR Child* OR Youth OR Teen* OR "young people"
NOT "art therapy" OR "art psychotherapy" OR "creative arts therapies" OR "dance therapy" |
| 3/20/21     | Electronic Database | Academic Search Complete | music* OR "music interventions" OR "music medicine"
AND trauma* OR "natural disasters" OR "sexual assault" OR "family separation" OR "sexual violence" OR "intimate partner violence" OR "distress" OR "complex trauma" OR "hate crime" OR "school shooting" OR "suicide" "self-injury" OR "self-harm" OR "human trafficking" OR "sex trafficking" OR "child abuse" OR "child neglect"
AND adolescent* OR child* OR youth OR teen* OR "young people"
NOT "art therapy" OR "art psychotherapy" OR "creative arts therapies" OR "dance therapy" |
| 3/21/21     | Electronic Database | PubMed | (music*[Title/Abstract] OR music interventions*[Title/Abstract] OR music medicine*)
[Title/Abstract] AND (Adolescent*[Title/Abstract] OR Child*[Title/Abstract] OR Youth*[Title/Abstract] OR Teen*[Title/Abstract] OR "young people") NOT "art therapy" NOT "art psychotherapy" NOT "creative arts therapies" NOT "dance therapy"[Title/Abstract] |
APPENDIX D

Screening and Selection Tool
APPENDIX E

Data Extraction Form (Modified Cochrane)
# Data Collection and Extraction Form

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<table>
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<table>
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<table>
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<tr>
<th>Notes:</th>
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</tbody>
</table>

## 1. General Information

1. **Date form completed** *(dd/mm/yyyy)*
2. **Initials/ID of person extracting data** *(self or RA)*
3. **Source/Publication Type** *(journal, book, conference, dissertation, abstract, etc.)*
4. **Source Name** *(Title of Journal, Book, Organization, etc.)*
5. **Publication Status** *(Published, Unpublished)*
6. **OTHER:**
7. **Notes:**

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*Note: This form is a template for collecting and extracting data from various sources for research purposes.*
### 2. Design Characteristics and Methodological Features

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Descriptions as stated in report/paper</th>
<th>Location in text (pg &amp; ¶/fig/table)</th>
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<tr>
<td>9.</td>
<td>Aim of study</td>
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</tr>
<tr>
<td>10.</td>
<td>General Method (Quant, Qual, Mixed)</td>
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</tr>
<tr>
<td>11.</td>
<td>Design/Approach</td>
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<td></td>
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<td>12.</td>
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<td>16.</td>
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### 3. Assessment of Research Variables

<table>
<thead>
<tr>
<th>RESEARCH VARIABLES</th>
<th>How Assessed (Measure, Observation, Interview Question, etc.)</th>
<th>Reliability/Validity/Utility</th>
<th>Location in text (pg &amp; ¶/fig/table)</th>
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<tr>
<td>17. Variable 1: Target Sx or Dx</td>
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<td>18. Variable 2: Context</td>
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<td>19. Variable 3: Use of Music (passive or active)</td>
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<td>21. Variable 4: Main Target</td>
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<td>22. Variable 5: Additional Targets</td>
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### 4. Study Participant Characteristics and Recruitment

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<tr>
<td>24. Population of Interest</td>
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<td>25. Recruitment Methods</td>
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<td>26. Sample Size</td>
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<td>27. Age</td>
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<td>28. Gender</td>
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<td>29. Race/Ethnicity</td>
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### 5. Setting Characteristics

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<td>Data Collection Setting(s)</td>
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### 6. Analyses Conducted

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<td>43. Key Result #1</td>
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7. Results
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<tr>
<td>52.</td>
<td>Key conclusions of study authors</td>
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<td>53.</td>
<td>Study Author’s Recommendations for Future Research</td>
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<td>54.</td>
<td>Does the study directly address your review question? <em>(any issues of partial or indirect applicability)</em></td>
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<tr>
<td>55.</td>
<td>Summary: General</td>
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<tr>
<td>56.</td>
<td>Summary: Implications for Practice</td>
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<tr>
<td>57.</td>
<td>Salient Study Limitations (to inform Quality Appraisal)</td>
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<td>58.</td>
<td>References to other relevant studies</td>
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<td>Other publications from this dataset</td>
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<td>60.</td>
<td>Further study information needed? (from whom, what and when, contact info)</td>
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<td>61.</td>
<td>Correspondence received (from whom, what and when)</td>
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APPENDIX F

Database Structure
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<tr>
<th>Study ID</th>
<th>Authors &amp; Year</th>
<th>Title</th>
<th>Publication Type</th>
<th>Research Method</th>
<th>Type of Analysis</th>
<th>Specific Design or Approach</th>
<th>Study Setting</th>
<th>Research Variables: Context</th>
<th>Research Variables: Use of Music</th>
<th>Type of Professional(s) Delivering Intervention</th>
<th>Music Therapy or Other?</th>
<th>Other</th>
<th>Research Variables: Target Sx or Dx</th>
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<tr>
<td>e.g.</td>
<td>Article or dissertation</td>
<td>Theoretical or empirical</td>
<td>If empirical: qualitative or quantitative?</td>
<td>RCT, case study, conceptual or observational review, descriptive</td>
<td>Hospital, school, outpatient therapy, etc.</td>
<td>What are they doing? research, individual therapy</td>
<td>Psychologist, Music Therapist (MT), MFT, LCSW, MD (psychiatrist), Nurse, Counselor, etc.</td>
<td>Y or N (if no, specify in next column)</td>
<td>Music video, song writing, musical theatre</td>
<td>What symptoms or diagnoses are being targeted?</td>
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<tr>
<td>Research Variables: Main Target</td>
<td>Research Variables: Additional Targets</td>
<td>Sample Characteristics: Age</td>
<td>Sample Characteristics: Race/Ethnicity</td>
<td>Sample Characteristics: Gender</td>
<td>Sample Size</td>
<td>Recruitment</td>
<td>Key Findings</td>
<td>Key Conclusion</td>
<td>Additional Takeaways</td>
<td>Applicability to RQs</td>
<td>Recs for Future Research</td>
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<tr>
<td>What are they trying to accomplish or measure?</td>
<td>Secondary targets</td>
<td>9-16, <em>adolescents,</em> etc.</td>
<td>Report percentage</td>
<td>Report percentage</td>
<td>$n = x$</td>
<td>Embedded or Recruited?</td>
<td>Outcomes: What worked? What didn’t?</td>
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APPENDIX G

Critical Appraisal Process Form
INDIVIDUAL STUDY QUALITY ASSESSMENT

Author(s) and Year: ____________________________ Study ID#_______

1. Methodology: Quantitative  Qualitative  Mixed Methods  Theoretical

2. Specific Design/Inquiry Approach: ____________________________

   RATING SCALE:   Strong=3  Good/Adequate=2  Weak=1  Missing=0  N/A

3. Strength of Literature Foundation and Rationale for Study: ______
   Current and relevant references, background literature sufficiently comprehensive, theoretically sound.

4. Clarity and specificity of Research Aims/Objectives/Questions: ______

5. Quality of research design or methodological approach: ______
   Considerations: Provides rationale for design chosen, appropriateness for research questions, clear
description of design and methodological approach, strength of design characteristics utilized (e.g., recruiting
bias, theoretical/methodological fidelity, etc.), potential confounds identified and addressed in some way,
consideration of internal and external validity in design.

6. Sample Selection and Characteristics: ______
   Considerations: Adequacy of sample size in context of design, detailed description of sample characteristics,
representativeness of sample, adequacy of sample characteristics in the context of research aims, sufficient
description of recruitment and selection of participants, extent of selection or sample bias.

7. Measures / Data Collection Tools (Scales, Observation, Interviews, etc.): ______
   Considerations: Rationale for selection clearly described, theoretical and/or methodological fidelity, sufficiently
comprehensive, etc. For quantitative: psychometric properties (reliability, validity, utility) described.

8. Data Collection: ______
   Considerations: Data collection procedures clearly described, intervention strategies and implementation
described in detail, quality of data collected, attrition, etc.

9. Analysis of Data: ______
   Considerations: Appropriateness of analysis for research questions and type of data, results (and/or
discussion, if theoretical) presented clearly and comprehensively, etc.

10. Discussion of Study Limitations: ______
    Considerations: Identifies and discusses limitations in the context of design/strategy utilized (e.g., various
forms of bias, internal validity, external validity [generalizability], ecological validity, transferability, credibility,
transparency, etc.), comprehensiveness of limitations identified.

11. Consideration of culture and diversity: ______
    Considerations: Attention to diversity within sample.

12. OVERALL RATING:  STRONG  GOOD/ADEQUATE  WEAK
    (mostly “3”s)   (mostly “2”s)   (mostly “1”s)
APPENDIX H

IRB Approval
September 11, 2020

Protocol #: 91120

Project Title: Music Interventions in the Treatment of Adolescent Trauma: A Systemic Review.

Dear Diana:

Thank you for submitting a “GPS IRB Non-Human Subjects Notification Form” for Music Interventions in the Treatment of Adolescent Trauma project to Pepperdine University’s Institutional Review Board (IRB) for review. The IRB has reviewed your submitted form and all ancillary materials. Upon review, the IRB has determined that the above titled project meets the requirements for non-human subject research under the federal regulations 45 CFR 46.101 that govern the protection of human subjects.

Your research must be conducted according to the form that was submitted to the IRB. If changes to the approved project occur, you will be required to submit either a new “GPS IRB Non-Human Subjects Notification Form” or an IRB application via the eProtocol system (http://irb.pepperdine.edu) to the Institutional Review Board.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite our best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the IRB as soon as possible. We will ask for a complete explanation of the event and your response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the IRB and documenting the adverse event can be found in the Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual at https://community.pepperdine.edu/irb/policies/.

Please refer to the protocol number denoted above in all further communication or correspondence related to this approval.

On behalf of the IRB, we wish you success in this scholarly pursuit.

Sincerely,

Institutional Review Board (IRB)
Pepperdine University

cc: Mrs. Katy Carr, Assistant Provost for Research
Dr. Judy Ho, Graduate School of Education and Psychology IRB Chair
APPENDIX I

List of Excluded Studies


4. Bosmans, Guy; Sanchez-Lopez, Alvaro; Finet, Chloé; De Raedt, Rudi, 2019 - Attachment-related attention bias plays a causal role in trust in maternal support.

5. Blitz, Lisa V.; Yull, Denise; Clauhs, Matthew, 2020 - Bringing sanctuary to school: Assessing school climate as a foundation for culturally responsive trauma-informed approaches for urban schools.


7. Thomson, Paula; Jaque, S. V., 2018 - Childhood adversity and the creative experience in adult professional performing artists.

8. van der Heijden, Marianne J. E.; Mevius, Hiske; van der Heijde, Nicky; van Rosmalen, Joost; van As, Sebastian; van Dijk, Monique, 2019 - Children listening to music or watching cartoons during ER procedures: A RCT.


11. Kwak, Yoonyoung; Mihaele-Adkins, Brittany; Mishra, Aura A.; Christ, Sharon L., 2018 - Differential impacts of participation in organized activities and maltreatment types on adolescent academic and socioemotional development.

12. Kwak, Yoonyoung; Mihaele-Adkins, Brittany; Mishra, Aura A.; Christ, Sharon L., 2018 - Differential impacts of participation in organized activities and maltreatment types on adolescent academic and socioemotional development.


15. Lea, Charles H. III; Malorni, Angela; Jones, Tiffany M., 2019 - 'Everybody is an Artist': Arts-based education and formerly incarcerated young black men's academic and social–emotional development in an alternative school.

16. McFerran, Katrina Skewes; Garrido, Sandra; O'Grady, Lucy; Grocke, Denise; Sawyer, Susan M., 2015 - Examining the relationship between self-reported mood management and music preferences of Australian teenagers.


18. De Nora, Tia, 2019 - 'Forever piping songs forever new': The musical teenager and musical inner teenager across the life course.

19. Ainsworth, Anna; Katabazi, Innocent, 2018 - Hip hop and NGOs: Rwandan youth building sites of resilience and resistance.


21. Christenbury, Katurah R., 2017 - I will follow you: The combined use of songwriting and art to promote healing in a child who has been traumatized.

22. Hayes, Bea Francis, 2020 - Life narratives of vulnerable adolescents: The heroes with whom they identify.

23. Porges, Stephen W.; Bono, Katherine E.; Ullery, Mary Anne; Bazhenova, Olga; Castillo, Andreina; Bal, Elgiz; Scott, Keith, 2018 - Listening to music improves language skills in children prenatally exposed to cocaine.


25. Swanson, Anita L., 2020 - Music therapy in schools: Stimulating the mind and body to create positive change.


27. Kim, Jinah, 2015 - Music therapy with children who have been exposed to ongoing child abuse and poverty: A pilot study.

28. Miranda, Dave; Osman, Muna; Blais-Rochette, Camille; Gaudreau, Patrick; Whitley, Rob, 2019 - Musical ethnocultural identity, happiness, and internalizing symptoms in youth.


35. Noris, Sierra, 2021 - Private studio music teachers’ attitudes regarding students with disabilities: A descriptive analysis.

36. Narvaez, Joana Corrêa de Magalhães; Remy, Lyssa; Bermudez, Mariane Bagatin; Scherer, Juliana Nichtenwitz; Ornell, Felipe; Surratt, Hilary; Kurtz, Steven P.; Pechansky, Flavio, 2019 - Re-traumatization cycle: Sexual abuse, post-traumatic stress disorder and sexual risk behaviors among club drug users.

37. Howe, Tasha R.; Friedman, Howard S., 2014 - Sex and gender in the 1980s heavy metal scene: Groupies, musicians, and fans recall their experiences.

38. Rodgers, Kathleen Boyce; Hust, Stacey T. J., 2018 - Sexual objectification in music videos and acceptance of potentially offensive sexual behaviors.

39. Wang, Shentong; Oldfield, Amelia, 2018 - The effect of music therapy sessions on the interactions between children and their parents and how to measure it, with reference to attachment theory.


42. Moss, Hannah Hofheimer, 2020 - The mediating role of sibling relationships and attachment for exposure to multiple developmental traumatic experiences on mental health outcomes.

43. Cropper, Kate; Godsall, Jo, 2016 - The useless therapist: Music therapy and dramatherapy with traumatised children.

44. Music, Graham, 2018 - Trauma and treading carefully: Walking delicate tightropes between safeness and emotional challenge.


46. Petering, Robin; Rhoades, Harmony; Winetrobe, Hailey; Dent, David; Rice, Eric, 2017 - Violence, trauma, mental health, and substance use among homeless youth Juggalos.


48. Olson, Josephine, 2016 - A trauma-informed approach to play therapy interventions with African American male children.

49. Batmanghelidjh, Camila, 2016 - Addressing the needs of seriously disadvantaged children through the arts: The work of kids company.

50. Guhn, Anne; Sterzer, Philipp; Haack, Friderike H.; Köhler, Stephan, 2018 - Affective and cognitive reactivity to mood induction in chronic depression.

51. Alfandary, Rony, 2015 - An instance of emotional absence of a father traumatized by war—Clinical material and musical illustration.


54. Wentling, Bethany; Behrens, Gene Ann, 2018 - Case study of early childhood trauma using a neurobiological approach to music therapy.

55. Gerber, Monica M.; Hogan, Lindsey R.; Maxwell, Kendal; Callahan, Jennifer L.; Ruggero, Camilo J.; Sundberg, Terri, 2014 - Children after war: A novel approach to promoting resilience through music.


57. Millett, Christopher R.; Gooding, Lori F., 2017 - Comparing active and passive distraction-based music therapy interventions on preoperative anxiety in pediatric patients and their caregivers.

58. Saarikallio, Suvi; Gold, Christian; McFerran, Katrina, 2015 - Development and validation of the Healthy-Unhealthy Music Scale.


61. Friedlander, Laura J.; Connolly, Jennifer A.; Pepler, Debra J.; Craig, Wendy M., 2013 - Extensiveness and persistence of aggressive media exposure as longitudinal risk factors for teen dating violence.

Klebanoff, Susan, 2016 - 'I always wished I could stop time': An adolescent girl, unresolved mourning, and the haunted third.

Harris, Johari; Irving, Miles; Kruger, Ann C., 2015 - Media literacy and perceptions of identity among pre-adolescent African-American girls.

Harris, Johari; Irving, Miles; Kruger, Ann C., 2016 - Media literacy and perceptions of identity among pre-adolescent African-American girls.

Carter, Susan M., 2018 - 'Mr. Fox is sad': Puppets as symbolic clients in the playroom.

Hillard, Russell E., 2015 - Music and grief work with children and adolescents.

Orozco, Marta, 2016 - Music preference and its effects on emotion processes and identity development in young adult females: An examination of the 'emo' subculture.

O'Doherty, Sarah; O'Connor, Rebecca, 2015 - Music therapy and neuropsychology: An innovative and integrated approach.

Yinger, Olivia Swedberg, 2016 - Music therapy as procedural support for young children undergoing immunizations: A randomized controlled study.

Blais-Rochette, Camille; Miranda, Dave, 2016 - Music-evoked autobiographical memories, emotion regulation, time perspective, and mental health.

Shaughnessy, Nicola, 2017 - Opening minds: The arts and developmental psychopathology.

Armstrong, Deborah, 2018 - Play therapy practices with children experiencing nightmares.

Mellenthin, Clair, 2018 - Play-based treatment for school-related fears and phobias of children.

Campbell, Marjorie S.; Ryan, Margaret; Wright, Daniel; Devore, Maria D.; Hoge, Charles W., 2016 - Postdeployment PTSD and addictive combat attachment behaviors in U.S. military service members.

Gooding, Lori F.; Yinger, Olivia Swedberg; Iocono, Joseph, 2016 - Preoperative music therapy for pediatric ambulatory surgery patients: A retrospective case series.

Gentle, Ellen C.; Barker, Melinda; Bower, Janeen, 2015 - Preservation of singing functioning in a 5 year-old following severe right-sided traumatic brain injury: Insights into the neurological resilience of song from pediatric music therapy.

Birnie, Kathryn A.; Chambers, Christine T.; Taddio, Anna; McMurtry, C. Meghan; Noel, Melanie; Riddell, Rebecca Pillai; Shah, Vibhuti, 2015 - Psychological interventions for vaccine injections in children and adolescents: Systematic review of randomized and quasi-randomized controlled trials.


Maharjan, Chhori Laxmi, 2017 - Sandplay therapy in Nepal: Case studies of underprivileged children.

Sholdice, Helen, 2017 - Sandplay therapy with children experiencing somatic symptoms.


Schmitz, Martha, 2013 - The case: Treating Jared through Seeking Safety.

Dayton, Carolyn Joy; Matthews, Wendy K.; Hicks, Laurel M.; Malone, Johanna C., 2017 - The expression of music throughout the lives of expectant parents.

Lynar, Emily; Cvejic, Erin; Schubert, Emery; Vollmer-Conna, Ute, 2017 - The joy of heartfelt music: An examination of emotional and physiological responses.

Robertson, Susan Terry, 2018 - The lived experience of a sexually abused woman moving toward wholeness.


Howe, Tasha R.; Aberson, Christopher L.; Friedman, Howard S.; Murphy, Sarah E.; Alcazar, Esperanza; Vazquez, Edwin J.; Becker, Rebekah, 2015 - Three decades later: The life experiences and mid-life functioning of 1980s heavy metal groupies, musicians, and fans.

Music, Graham, 2014 - Top down and bottom up: Trauma, executive functioning, emotional regulation, the brain and child psychotherapy.

Gordon, Jenaya; Paisley, Suzanna, 2018 - Trauma-focused medical play.

Suetani, Shuichi; Batterham, Michael, 2015 - Un-rapping teen spirit: Use of rap music as a treatment tool in adolescence psychiatry.

Salter-Ling, Natasha, 2017 - Walking the path of the cat through trauma, grief & renewal: An adolescent finds his way.


Mitchell, Rie Rogers, 2017 - Alchemy in sandplay therapy.
96. Chorn-Pond, Arn; Ungar, Michael, 2012 - An interview with Arn Chorn-Pond: Helping children in Cambodia through the revival of traditional music and art.
98. Kim, Jinah; Kim, Kwanghyuk, 2014 - Behavioral and musical characteristics of the children who are exposed to child maltreatment and poverty in South Korea: A survey.
99. Blain-Moraes, Stefanie; Chesser, Stephanie; Kingsnorth, Shauna; McKeever, Patricia; Biddiss, Elaine, 2013 - Biomusic: A novel technology for revealing the personhood of people with profound multiple disabilities.
100. Okumura, Yuka; Asano, Yoshitaka; Takenaka, Shunsuke; Fukuyama, Seisuke; Yonezawa, Shingo; Kasuya, Yukinori; Shinoda, Jun, 2014 - Brain activation by music in patients in a vegetative or minimally conscious state following diffuse brain injury.
103. Shulman, Shmuel; Rozen-Zvi, Ruth; Almog, Zvava; Fennig, Shmuel; Shavit-Pesach, Tamar, 2017 - Effects of group psychotherapy on young adults' romantic and career functioning.
105. Zhao, Junfeng; Chi, Peilian; Li, Xiaoming; Tam, Cheuk Chi; Zhao, Guoxiang, 2014 - Extracurricular interest as a resilience building block for children affected by parental HIV/AIDS.
106. Bonomi, Amy E.; Nemeth, Julianna M.; Altenburger, Lauren E.; Anderson, Melissa L.; Snyder, Anastasia; Dotto, Irma, 2014 - Fiction or not? Fitty Shades is associated with health risks in adolescent and young adult females.
108. Springer, Craig I.; Misurell, Justin R., 2016 - Game-based cognitive-behavioral therapy for child sexual abuse.
112. Kawakami, Ai; Katarhina, Kenji, 2015 - Influence of trait empathy on the emotion evoked by sad music and on the preference for it.
113. Young, Katherine S.; Parsons, Christine E.; Stein, Alan; Kringelbach, Morten L., 2012 - Interpreting infant vocal distress: The ameliorative effect of musical training in depression.
114. Giordano, Francesca; Castelli, Cristina; Crocq, Louis; Baubet, Thierry, 2012 - Le non-sens et le chaos dans les dessins des enfants victimes du tremblement de terre aux abruzzes.
115. Ybarra, Michele L.; Diener-West, Marie; Markow, Dana; Leaf, Philip J.; Hamburger, Merle; Boxer, Paul, 2008 - Linkages between Internet and other media violence with serious violent behavior by youth.
116. Ragani, Cecilia; Gammarano, Angela; Cerutti, Francesca; Zangari, Alessia; Bianchi, Federica; Branca, Martina, 2018 - Mani che parlano: Un'esperienza laboratoriale per 'ricucire' le emozioni della propria storia.
117. Harris, Johari; Irving, Miles; Kruger, Ann C., 2015 - Media literacy and perceptions of identity among pre-adolescent girls.
119. Bower, Janeen; Catroppa, Cathy; Grocke, Denise; Shoemark, Helen, 2014 - Music therapy for early cognitive rehabilitation post-childhood TBI: An intramix methods case study.
120. Parsons, Christine E.; Young, Katherine S.; Jegindø, Else-Marie E.; Vuust, Peter; Stein, Alan; Kringelbach, Morten L., 2014 - Music training and empathy positively impact adults’ sensitivity to infant distress.
121. O'Callaghan, Clare; Dun, Beth; Baron, Annette; Barry, Philippa, 2013 - Music's relevance for children with cancer: Music therapists' qualitative clinical data-mining research.
123. Precin, Patricia, 2011 - Occupation as therapy for trauma recovery: A case study.
125. Somer, Eli; Somer, Liora; Jopp, Daniela S., 2016 - Parallel lives: A phenomenological study of the lived experience of maladaptive daydreaming.
129. VanFleet, Risë, 2015 - Short-term play therapy for adoptive families: Overcoming trauma, facilitating adjustment, and strengthening attachment with filial therapy.
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