Music Training in Psychiatric Treatment:

An Evidence-Based Intervention Model

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Early in my career as a psychology student I became determined to use my education to impact real people. This led me to pursue a position in which I could be fully immersed in mental health care: working in a psychiatric hospital. I became a volunteer at New York-Presbyterian Hospital, where I encountered patients with a range of diagnoses, and more notably, a range of musical experience. Some were instrumentalists, some conservatory graduates, one an ex-record label executive, and some simply enjoyed listening to their iPods or humming through the halls. As a musician and music student myself, I instantly became captivated by the many correlations between mental illness and music, and more importantly, how music can be used to help patients like the ones in front of me. I noticed that the unit offered a considerable amount of creative outlets for the patients with the exception of one: music.

Once I realized this, I took it upon myself to organize a sing-along group for the patients. It was Christmas time, so I played carols on the piano, handed out lyric sheets, and everyone sang their best. I was not thinking about therapizing the patients in any way, but rather as a music student myself, I knew how pleasurable it can be to passively perform music you already know. As expected, I got positive feedback from patients who enjoyed singing in the group. What I did not expect, however, was the number of patients who were impressed by the fact that I could read sheet music and play it on the piano, and asked me if I could teach them to do the same.

This interaction, combined with the apparent lack of musical opportunities for patients, is what first instilled my curiosity towards an untraditional, music training-based approach to music therapy. In this paper, I use the results of existing music therapy and music psychology research to show that music training increases the potential for a music-based intervention to provide diverse, long-term benefits to individuals with psychiatric illnesses, and how such an intervention may be implemented in psychiatric treatment.

The state of the field

Music therapy is a growing area of interest with many known benefits for those with mental illness (Chhina, 2004; Grocke et al., 2009; Jackson, 2015). One of the primary goals of music therapy is to give individuals with severe and chronic mental illnesses the skills and coping tools to live successful and fulfilling lives once they leave intensive treatment, such as an in-patient facility, and are reintegrated into their community (Chhina, 2004). Insight achieved during the creative process of music-making also gives patients the internal resources necessary to return to their everyday lives while making appropriate adjustments for their illness. Music therapy furthermore increases recognition of the need for help when one's mental state deteriorates and encourages openness about personal problems, which reduces the probability of relapse (De l'Etoile, 2002). The psychosocial benefits that are presently known to arise from music therapy for individuals with mental illness include community integration, independent living, providing a meaningful activity, socialization, and perceived social support (Herd, 1986).

Standard psychiatric treatment often addresses only the overt, most dangerous symptoms that a patient is experiencing. Stabilization is, appropriately, the primary goal of emergency psychiatric treatment for severe mental illnesses. While this is crucial, treatment for severe mental illness may neglect the development of skills needed for long-term rehabilitation. Jackson (2015), a researcher and practitioner of music therapy, examined the most prominent psychosocial benefits of music therapy for chronic mental illness (CMI), including a focus on the obstacles of simply *having* a CMI, regardless of symptomatology. Among the issues faced by individuals living with CMI are difficulties with relationships, living independently, securing employment, and coping with everyday stressors. Further, those living with an enduring mental

illness may experience grief over “losing” the person they were before being diagnosed with a psychiatric illness, as well as feelings of isolation and stigmatization in their community. A medication regimen may not help to relieve these feelings, but music can.

Studies show that music therapy results in personal empowerment, positive identity perception, increased self-esteem (including one’s ability to separate themself from their illness), and the development of skills needed for reintegration. It is worth noting that progress in these areas can in-turn reduce the presence of the overt symptoms caused by one’s diagnosis (Jackson, 2015). In some cases, music therapy can even make drug therapy more effective (Stefani & Biasutti, 2016).

Music therapy is a diverse practice, and may focus on one or several possible musical activities, including music listening, improvisation, or songwriting. Typically, music therapy emphasizes activities that can be done without any prior knowledge of music. For example, a review of the existing music therapy literature by Stewart and McAlpin (2016), which surveyed the most prominently used elements of songwriting in therapy, including choosing a form, writing lyrics, writing a melody, and adding harmonies and accompaniment. They found that the aspect of songwriting most discussed, and therefore most used in music therapy, was writing lyrics. Of the many steps of the songwriting process, writing lyrics is the one that requires the least familiarity with music. Although the act of writing lyrics is indisputably integral to many types of music-making, centering the process on lyric-writing neglects the healing properties of music in itself since it is largely verbally modulated.

The elements engaged least in songwriting therapy exercises were choice of form, tempo, and key or mode. However, these are also the aspects of music that our brains perceive as the strongest communicators of emotion (Stewart & McAlpin, 2016). Choosing a key and song-form

require a higher level of musical knowledge and training than writing lyrics or singing a melody, which is likely why patients in music therapy programs do not make choices at this level of music composition. Therefore, by incorporating a degree of music education and training, patients would be better equipped to make intentional choices about the music that they produce, allowing them to express themselves more extensively and receive additional benefits that traditional music therapy is often not structured to give.

The previous review is one example of how the concept of music training and education as a part of therapeutic engagement with music is heavily lacking in the literature. Traditional music therapy builds skills in important psychosocial areas but rarely develops musical ability, which I will argue inhibits the full therapeutic potential of music engagement for those with psychiatric illness. Instead, I suggest that the deeper understanding and knowledge of music that is achieved through musical training will enhance the positive outcomes of musical experience. Perhaps more importantly, in addition to being imperative to developing a stronger relationship with music, sufficient technical knowledge is sought by recipients of the intervention, though rarely attainable. In fact, the lack of musical training is often the main aspect of music therapy with which patients are dissatisfied (McCaffrey, 2018). Further, providing standard music therapy without giving patients opportunities to advance their musical competency may result in patients becoming bored as sessions become monotonous, therefore shortening their engagement with music.

While the message that there is no *wrong* way to make music can be useful and encouraging, devaluing the development of musical ability entirely is a detriment for a number of reasons. For example, developing musical competence is synonymous with developing

self-esteem and self-efficacy, and allows patients to feel more confident expressing themselves in the new language that is music (Kenner et al., 2020). As De l'Etoile (2002) further notes, one of the central efficacies of music therapy is that patients should perceive it as helpful. By not emphasizing the importance of providing patients with the musical skills to continue engaging with music outside of therapy, patients may not see music as a practical coping strategy to rely on in their everyday lives.

Another of the aforementioned goals of traditional music therapy is to allow patients to see themselves outside of their diagnosis while regaining an internal locus of control (LOC) (Chhina, 2004). An internal LOC is the perception that one has more control over events in their lives than these events have over them, and it is reasonable to expect that the presence of music education and training in a music intervention program would better contribute to this than programs that neglect these aspects. Suitable music education and training would allow patients to more fully comprehend what they are doing, why they are doing it, and how to successfully make music on their own. I expect that these outcomes will afford those with a severe mental illness an outlet through which they can better exert control over their thoughts, feelings, and actions.

With these advantages of a music training approach in mind, I propose a music training-based program as a viable alternative to traditional music therapy, on the basis that music training will be more conducive to long-term rehabilitation by instilling a deeper knowledge of music in patients and therefore giving them access to a coping tool that can be utilized throughout their recovery, even after the primary music intervention is completed. In order to best outline my model for a music training program in a healthcare setting, I will first

explore the theory and evidence that underscore the predicted effectiveness of this approach, starting with the known cognitive benefits of music training.

Cognitive benefits of music training

Although the literature on the benefits of music training as it specifically pertains to individuals with severe mental illness is extremely limited, there is a growing body of research on the cognitive benefits of music training. These cognitive skills are both valuable in themselves and are expected to be transferable to other psychosocial areas, thus making the cognitive benefits of music training likely to have positive implications on patients with a variety of psychiatric diagnoses.

The development of musical expertise through a multi-faceted music training program requires an increase in control over multiple cognitive processes, including the ability to resist distraction, inhibit impulsivity, increase cognitive flexibility, and carry out self-initiated and goal-directed behaviors (Jakobson & Cuddy, 2019; Kantor-Martynuska, 2015). Control over these processes is needed by individuals living with a severe mental illness to not only correct maladaptive patterns of thinking and feeling, but also to navigate their environment effectively and build a satisfying life around their illness.

Meta-cognitive and emotional control

Another primary advantage of music training is the strengthening of both meta-cognitive and emotional control, and regulating the interactions of the two. Meta-cognitive control in music practice and performance results from the need to plan and monitor rehearsals, self-evaluate progress, and develop an accurate concept of strengths and weaknesses. Emotional control is also

integral to successful musical practice, as the musician must be able to cope with feelings of inadequacy, performance stress, and persevere through the delay of gratification that is characteristic of the musical process (Kantor-Martynuska, 2015). The strengthening of meta-cognitive and emotional control is similarly required for successful rehabilitation from a severe mental illness. Those living with a mental illness must engage in constant, objective self-evaluation and the ability to gain a clear perspective of present issues and needed improvements—habits that someone learning to play an instrument would similarly need to form. They also need to be aware of the emotions that contribute to their thoughts and behaviors. The multiple levels of music training—learning, practice, and performance—improve a person's ability to exert control over both themselves and their environment while maintaining a great degree of flexibility between an outward-oriented, goal-focused approach and an inward-oriented, process-focused approach (Kantor-Martynuska, 2015).

Another aspect of meta-cogntive control that is particularly relevant to music is the focus of attention. Being a musician necessitates that attention is directed in diverse ways, from learning music theory and memorizing a piece of music to properly playing an instrument and being aware of the body during performance. Controlling how much attention is given and to what is essential in reshaping persistent thought and behavior patterns by allowing one to shift between two states that Siegel (2011) calls "flow" and "reflection." Flow is essentially being fully immersed in an activity, and is a state in which attention given to the self and the environment can diminish. As a musical experience, flow is what is achieved through listening to a beautiful mass setting or playing a piano piece that is known by heart. However, reflection is also a key aspect of musicianship that happens while trying to improve one's performance of a piece or rework a composition. Reflection allows us to be proactive rather than reactive. Both

flow and reflection are attained through well-rounded music training, and both are necessary to overcome psychological distress.

Training-specific cognitive skills

Considering this evidence, it is clear that simply undergoing music training, regardless of what specifically the individual is being trained to do, results in a number of cognitive benefits. However, when we examine each individual component of a well-rounded music education and training program, there are several cognitive skills that musical activities are known to enhance. For example, Jakobson & Cuddy (2019) found that music training allows individuals to better process the emotional information conveyed through music. It also improves one's ability to register prediction errors. Since music contains consistencies in form and tempo that are periodically disrupted for effect, knowledge of when and why these consistencies are being violated improves predictive coding skills in music by strengthening the brain processes involved in anticipation, expectation, and prediction (Jakobson & Cuddy, 2019). Making sense of unexpected events is an attribute that can assist individuals with a range of psychiatric diagnoses.

Learning and performing music also lend themselves to the improvement of important cognitive attributes. Learning music requires top-down strategies, from analyzing and grouping information in musical scores so that it can be retrieved during performance to structuring musical practice (Jakobson & Cuddy, 2019). Utilizing such top-down strategies leads to improvement of executive function (EF), which is understood to be imperative to mental health and psychosocial development as it allows us to carry out goal-directed behavior and adapt effectively to our environment (Behrwind et al., 2011; Diamond, 2013). The primary EFs are inhibition, working memory, and cognitive flexibility. East-Richard et al. (2020) found that

across a range of psychiatric diagnoses, including psychotic, depressive, and anxiety disorders, deficits in EF were the most severe and most often reported. Therefore, refinement of these functions through music training—namely studying and performing music—is expected to positively impact the improvement of psychiatric symptoms. However, more in-depth studies of how particular musical activities can benefit individuals with a persistent mental illness have been conducted in the music therapy realm, and I will survey those findings below. While I will provide an analysis of how each of the four main facets of well-rounded music training—listening, performing, music theory and musicianship, and composition—result in a host of psychosocial benefits, it is important to note that the *integration* of all of these areas are what, ultimately, make a music training approach worthwhile.

Integration

The integrative aspect of music training is analogous to the similar goal of integration in psychotherapy. Integration, in psychological terms, is essentially what helps a person to become "unstuck" from any unresolved obstacles to wellbeing. Siegel (2011) describes eight domains of integration that are crucial to mental health: integration of consciousness, vertical and horizontal integration, and memory, narrative, state, interpersonal, and temporal integration, all of which I predict can be achieved through the multiple domains of music training. As I delve into the psychological benefits of each of the four musical processes, I will discuss which domains of integration they facilitate. I posit that a music training program's propensity for each form of integration is what sets this approach apart from the average music therapy experience.

Music Listening

The first and arguably most important step in pursuing musical training is listening to music. The more one listens to music, the better they become at identifying what makes a piece of music work effectively, and how moods and messages are conveyed through a musical form. Understanding music's function as a form of communication and expression is vital for both the performer and the composer, as through habitual analytical listening, a musician both trains their ear and finds their voice. Therefore, listening to music should be the first exercise of a musical training intervention. Music listening also produces its own unique benefits for patients suffering from mental illness, and is perhaps the most investigated as a therapeutic method (de Witte et al., 2020; Groarke et al., 2020; Sackett & Edwards, 2020).

Emotional regulation

As one of my choir directors once said, music is meant to either match a mood or change a mood. His claim is supported by music psychology research that shows that music can either be used to counteract low moods and anxious states (Stewart et al., 2019), or to provide affirmation and comfort to those experiencing sad or depressed moods when listening to music that reflects those moods (van den Tol, 2016). Music listening's capacity to alter or reinforce mood states is what makes this activity particularly useful for improving emotional regulation. Emotional regulation refers to one's ability to identify the emotion they are experiencing, and then adaptively navigate and express that emotion (Bryant, 2015). Those who listen to music with intention often display better emotional awareness and emotional regulation than those who do not (Dingle & Fay, 2017). Music listening elicits increased emotional control because it allows the appraisal of emotions through a safe and acceptable form, allowing one to objectively

evaluate their emotional state and emotion-elicited responses without judgement. When difficult emotions have been brought up by music, whether through the music itself or personal associations triggered by the music, they are considered by the individual to be "acceptable." Indeed, "somehow it is acceptable to shed tears while listening to a Mahler symphony, the same tears we suppress when confronted with our own or another's pain." (Ortiz, 1997, p. 7) Listening to music garners this effect, in part, through arousing emotional resonance. The expression of a piece of music is mirrored by the listener and manifests itself first in a physical response, and through feedback, results in an affect (Koelsch, 2015).

Appropriately, music has been used with increasing frequency in psychiatric facilities due to its proven ability to calm and comfort patients (Gusewell et al., 2019). A study by Gusewell et al. (2019) tested the effects of utilizing a music listening device in seclusion rooms, and found that allowing patients to listen to music while in seclusion helped them to regain control over their behavior and led to more positive interactions with the treatment team. In this particular study, as is the case with the majority of studies that employ music as a therapeutic mechanism, the music was pre-selected with the intention of being "neutral" and "relaxing." However, there is evidence that self-selected music can be just as effective, proving that music listening does not have to occur in a constricted music therapy context for it to be beneficial for a person with a mental illness.

Self-selected music

Studies have shown listening to have a uniquely positive impact on one's ability to cope with stressors by increasing mindfulness and reducing anxiety. A study done by Groarke et al. (2020) found both self-selected and researcher-selected music listening was more effective in increasing

mindfulness and reducing anxiety in stressful situations than other forms of active listening and silent controls, with no significant difference between self-selected and researcher-selected music. Although these results demonstrate that listening to self-selected music and pre-selected music yield similar benefits, a valid case can be made for opting for self-selected music as a coping tool for situations demanding emotional regulation. Allowing individuals to choose their own music, or songs that they already know and enjoy, increases the likelihood that they will turn to this music when faced with everyday stressors, making it a more accessible approach to achieving regulation through listening. When one undergoes music training, the student is often assigned listening material that allows them to hear examples of what they are learning to do musically while gaining an appreciation for a variety of genres. However, listening to self-selected music is how a student finds their unique musical interest and facilitates insight outside of the training process. Both avenues of listening are equally important to the music training process, and therefore should be equally weighted in the construction of a music training intervention for individuals with mental illness.

Listening & Integration

In either case, music listening evokes the integration of consciousness, or bringing states into awareness (Siegel, 2011). An integration of consciousness involves acknowledging a, sometimes painful, experience without being consumed by it, which resembles music listening and its propensity for emotional regulation. When listening to music, one is presented with a finished and unchangeable product, along with any associations that the listener has with that piece of music. One may think of all the ways that a piece of music can be different or imagine what it

"should" be, but while passively listening to music, they must accept what they are hearing, and feeling as a result, for whatever it may be in the moment.

While music therapy programs often provide participants with particular listening materials, there are compelling reasons to include self-selected music in the curriculum. Self-selected music in particular may also assist memory integration, or making implicit memories explicit. An unintegrated memory state is caused by trauma, which also happens to be a unifying factor among people with psychiatric diagnoses, and forces a person to shift between avoidance and chaos (Siegel, 2011). Since music evokes conditioned responses, whether through learned, semantic associations, or autobiographical connection, music that holds a personal meaning may be linked to implicit memories that trauma may force one to suppress (Koelsch, 2015). Therefore, listening to self-selected music can lead to awareness and acceptance of these memories and relieve one from this painful, unintegrated state.

Performance

Music performance has long been viewed as an ideal therapeutic and community-building practice. Performing music, especially in group settings, stimulates a greater awareness of one's emotions, promotes a sense of belonging and meaning, and facilitates both group coherence and a positive sense of personal identity (Bailey & Davidson, 2003). Performing music with a group also enables synchronicity, emotional resonance, interpersonal trust, communication, and openness (Aalbers et al., 2019; Foubert et al., 2020; Koelsch, 2015). Almost all performance contexts involve some degree of collaboration, whether that be singing in a choir, playing in an orchestra, or singing with a band, and therefore the psychosocial benefits of group music

performance that have been explored are applicable to much of what it means to be a performing musician.

Performance & emotional regulation

Emotional resonance is essentially the sharing of emotional states between people, which directly impacts emotional regulation. Emotional resonance allows one to see their present emotions reflected by others in a group, which can be achieved through musical performance in group settings. This leads to positive changes in emotional regulation, including increased awareness of emotions, the reappraisal of these emotions, and greater acceptance of the emotions as a result of seeing them experienced by others (Aalbers et al., 2019). Collaborative music-making also leads to emotional states within the group becoming more homogenous, reducing extreme feelings of depression or anger, for instance, within the individual (Koelsch, 2015). Group improvisation is thought to be particularly useful for returning these benefits, as improvisation requires a greater awareness of oneself and awareness of others as members of a group exchange in a musical interplay of ideas and expressions.

Social benefits of performance

Perhaps more importantly, music performance has strong social benefits that can assist individuals with severe and chronic mental illness. While living with a mental illness often leads to feelings of loneliness and isolation (Jackson, 2015), performing music in a group and working towards a common goal instantaneously creates a social environment that can curb these feelings of isolation. Collaborative music-making also engages social cognition, or theory of mind, and demands that one effectively navigate the intentions, needs, and feelings of others (Koelsch,

2015). Deficit in theory of mind is characteristic of a number of psychiatric conditions, including schizophrenia and suicidality, and therefore should be strengthened through a music-based intervention for those with mental illness (Brune, 2005; Hatkevich et al., 2019). Social cohesion is another positive effect of music performance within a group, as it creates a sense of belonging, forms attachments between individuals, and gives members the confidence that similar opportunities for social engagement can occur in the future (Bailey & Davidson, 2003; Koelsch, 2015). Tuning into the internal worlds of others while creating meaningful connections is what Siegel (2011) refers to as interpersonal integration, which can greatly serve individuals whose mental states make forming healthy relationships challenging. A more complete music training may increase the potential for interpersonal integration as participants become more adept at communicating through a musical language and understanding the musical choices of their collaborators.

Eyre (2011) surveyed participant experiences of individuals with chronic mental illness who participated in a therapeutic chorale. Participants felt that the chorale most positively affected their self-esteem, emotional states, and ability to cope with stress, as well as increasing their sense of group cohesion. Participants in the chorale showed increased tolerance and understanding, and developed a more positive attitude towards others in the group as well as themselves. Their self-esteem improved, and they even perceived that others viewed them in a more positive light since joining the choir. A higher regard for the self is linked to positive rehabilitation outcomes and a lower likelihood of psychiatric relapse (Eyre, 2011). It is also worth noting that singing in a choir facilitates a greater sense of trust and cooperation than listening to music and other passive, therapeutic activities, because it utilizes the active

participation of an entire group at once (Anshel & Kipper, 1988). This has positive implications for a variety of psychiatric diagnoses.

Little research has been done on the psychosocial benefits of performing music individually, apart from the cognitive benefits that were briefly discussed above, however on a psychological level, music performance also benefits the individual through its capacity for emotional regulation. One aspect of emotional regulation is coping with stress, which is strengthened through music performance as the ability to handle performance stress translates to being better able to handle life stress (Eyre, 2011). Further, performing helps one to recognize their emotions as they are being expressed in the moment and proactively alter their mood (Eyre, 2011).

Performance & Integration

Musicologist Suzanne Cusick (1994) wrote, "As a performer, I act on and with what we ordinarily call music with my body; as a musicologist I have been formed to act on (and with?) what we ordinarily call music with my mind, and only with my mind. Thus, my musicological habitus inclines me to think about music's fixed, text-like qualities, an inclination that is perpetually at odds with the way my performing self inclines to think about and respond to music" (p. 8). Here Cusick touches upon the potential for a disconnect between an understanding of music that comes from the body versus the mind, and the conflict that can arise as a result. This lends itself to Siegel's concept of vertical integration, or the joining of the mind and body, and how we may apply this to musical performance. Vertical integration may be inhibited for a number of reasons, including the presence of trauma or disorders that make accessing emotions difficult. When one is "cut off" from the body and thus ignores the important messages that come

from our bodily responses, feelings and perceptions become flattened and disconnected (Siegel, 2011). Though strictly hypothetical, in borrowing from Cusick's perspective, I would argue that music performance, and particularly *trained* musical performance, enables vertical integration through taking the technical knowledge of music that lives in the mind and applying it through the body. Singing or playing an instrument demands that one maintain mental and physical awareness simultaneously, focusing attention on breathing, posture, and the body's movements in addition to accessing learned information about the music that is being performed.

Music composition

Castellano (1969) studied the outcomes of incorporating music composition within a music therapy program, noting that composition has been almost completely neglected within music therapy because of the typical lack of music training in patients. This same issue presents itself when examining the current music therapy literature. Since true music composition is near impossible without some degree of music education, a music training program—like the one that I am proposing—would need to be implemented before a conclusion on the benefits of formal music composition to psychiatric patients can be made. With that said, Castellano (1969) does describe an instance in which music composition classes were provided within a psychiatric setting, and notes that within five weeks, one patient who had no prior musical training was able to write an alma mater with text and music. This evidence is highly anecdotal, however, and empirical studies on the effectiveness of a compositional approach would need to be conducted after proper musical training is given to patients.

Songwriting Studies

Although formal music composition has been given limited attention within the literature, we can look to other types of music creation in order to gain insight into how composition may function within a music training program for psychiatric patients. Songwriting is a popular type of music making exercise done in music therapy, and a process that researchers Chang et al. (2017) studied in patients diagnosed with severe mental illnesses such as schizophrenia and affective disorders. The study involved the implementation of a weekly songwriting workshop in which patients wrote lyrics as a group, set the lyrics to music, then finalized and performed the collaboratively written song. The researchers found that the presence of this program returned results of decreased anxiety, increased self-esteem, and higher quality of life for the participating patients. They also concluded that the collaborative nature of the songwriting process allowed patients to turn individual experiences into shared narratives. This improves self-esteem by allowing patients to see that their disorder is not an individual character flaw but a condition many others experience. Moreover, as discussed with improvisatory music-making, this process may strengthen emotional regulation by giving patients the space to see their thoughts and emotions reflected by others and receive these thoughts and emotions with less judgement. Music creation may be more effective in garnering these outcomes than other forms of music engagement because it requires more reflection than other activities (Chang et al., 2017). Thus, the end goal of any music training program meant for populations with psychiatric illnesses should be using their acquired knowledge to create original music.

Baker et al. (2018) conducted a similar study, but with patients with long-term neurological disorders. They found that patients' participation in a songwriting program enhanced positive meaning-making and resulted in four outcomes related to building a positive

self-concept. These outcomes were: changing perspectives about oneself, becoming aware of one's inner resources, reconceptualizing values and confirming existing values, and acceptance of the fluidity of the self and one's situation. In this study, participants were instructed to write a total of three songs: one about the "past self," the second about the "present self," and the third about the "future self." As the researchers concluded, framing the songs in this way allowed for shifts in the participants' self-concepts in that they were able to identify past obstacles and their ability to overcome them (past self), evaluate their current situation and how they are adapting to their diagnosis (present self), and set realistic yet meaningful goals for the future (future self) (Baker et al., 2018). Creating a positive self-concept and eliciting hope for the future is similarly necessary for psychiatric patients who may be worried about how they will cope with their diagnosis once leaving the safe, controlled environment provided by intensive psychiatric treatment, making the outcome of this study done with those undergoing neurorehabilitation applicable to the psychiatric population. Learning productive ways to live with a potentially debilitating mental illness lessens the probability of relapse and improves the chances of successful reintegration into everyday life.

As these studies have shown, songwriting can be an indispensable tool when using music to change the trajectory of a patient's experience with mental illness by providing them with an outlet in which they can make sense of their feelings and circumstances, and build hope for the future. This relates to what Siegel (2011) calls narrative integration, or being able to create a coherent and flexible story from our experiences. He notes that strengthening narrative integration allows us to overcome the constrictive scripts that we have about ourselves and our lives. Songwriting may also lend itself to state integration, or the ability to accept the parts of ourselves and our needs that sometimes conflict, by providing a space to explore and negotiate

how these various states coexist. The previously mentioned studies illustrate how songwriting can facilitate this, helping patients to reconstruct the personal narratives they may feel bound by as a result of their experience with a severe and chronic mental illness.

Nonverbal Music

One way that songwriting achieves this effect is through the use of metaphors, which may be used to facilitate metacognitive change (Wells, 2009). Writing song lyrics is similar to writing poetry, which has been shown to activate detached mindfulness, or adopting an objective perspective of one's own thoughts and feelings, due to its metaphorical nature (Asgarabad et al., 2018). This type of metacognitive change can benefit patients in a number of ways, including dealing with negative emotions that result from particular diagnoses and forming coherent and integrated narratives. However, as mentioned earlier, songwriting—the most utilized type of formal music creation in therapy—is verbally modulated and neglects the potential of communicating through a strictly musical form. Instrumental music is perhaps even more metaphorical than its text-set counterpart, as messages can be made with greater ambiguity and detachedness when semantic language is not involved. There are many elements of music that can be manipulated by a composer to convey meaning including key, mode, tempo, rhythm, and melody.

Further, Levitin (2006) writes that music not only activates the same neural areas as language, but can further find its representation in the "reptilian brain," or the primitive structures associated with emotion, motivation, and reward, which language cannot. For example, the cerebellum, which is responsible for timing and movement, is linked with the amygdala, which rules emotion, and the frontal lobe, whose function involves impulse control

and planning. It is important to note that the cerebellum is activated to a greater extent by music than other types of noise (Levitin, 2006). At this point we know that control over emotions and impulses, as well as the ability to make rational plans, are critical for rehabilitating from a psychiatric illness. Therefore, limiting patients' ability to manipulate the qualities of music that have the most influence over our brains gives them less agency over how they tell their story, and thus diminishes their capability to make music that will best serve them individually.

As this research demonstrates, the fundamental components of music are too often ignored in music therapy and disproportionate attention is given to writing lyrics. This is certainly due to a deficit of technical musical knowledge in the majority of patients and a greater familiarity with writing ideas with words as opposed to notes on a staff. Therefore, it is clear that better music education may be vital for immersion in music to be its most worthwhile for individuals with a chronic mental illness. Fortunately, receiving music education has demonstrated benefits in and of itself, although this type of research has not yet been conducted with psychiatric patients. Shields (2001) and Hickey (2018) both investigated the benefits of music education with at-risk youth and both studies similarly concluded that participation in a music education program helped youth to build more positive self-perceptions that were positively correlated with their feelings of elevated musical competency. Understandably, this outcome would be similarly desirable for psychiatric patients.

Although there are not studies to reference that show music education to benefit psychiatric patients in particular, it is well-known that learning a new skill as an adult has positive effects on mental health by adding meaning to life, increasing energy, and reducing feelings of anxiety and depression (Waller et al., 2018). For all the aforementioned reasons, music training is a valuable skill for psychiatric patients to acquire, and the fact that learning a

new skill in general can return favorable outcomes in itself makes the case for a music training intervention that much stronger.

Music Education & Integration

In keeping with the theme of integration, music education will presumably promote the final domain of integration: horizontal integration, or the merging of the right and left sides of the brain. Horizontal integration is what happens when the left brain, which is logical, linguistic, and literal, links with the right brain, which is imaginative, intuitive, and insightful. Siegel notes that obstacles to horizontal integration result in disconnection within ourselves and with others, and inhibits the "creativeness, richness, and complexity" that comes from the left and right sides of the brain working in harmony (Siegel, 2011, p. 72). I suggest that a comprehensive music education would strengthen horizontal integration as it develops both a holistic (right brain) and semantic (left brain) understanding of music, and demands that both aspects be used in conjunction.

Benefits by Disorder Type

I have shown that a thorough music training program emphasizes improvements in several key areas of mental health. The various activities and skills that are integrated into music training promote emotional regulation, cognitive control, self-esteem, and social skills, among other determinants of long-term rehabilitation from a psychiatric illness. While each outcome of a music training intervention is able to benefit patients of all disorder types to some extent, certain musical activities are more likely to influence some patient groups over others.

Benefits to those with regulation disorders (depression, anxiety, & bipolar)

Based on the previous findings, I predict that a well-rounded music training intervention will be highly effective in rehabilitating from anxiety and mood disorders, as it targets many of the symptoms of these illnesses. Emotional regulation, for one, is a key commonality among depression, anxiety, and bipolar disorder (Pico-Perez et al., 2017). As emotional regulation is a primary benefit of three of the musical skills mentioned in this paper (listening, performing, and composition), the integrative nature of the music training program I propose will most benefit individuals with such dysregulation-based disorders.

Anxiety

While anxiety, depression, and bipolar disorder share emotional dysregulation as a characteristic, it presents itself in slightly different ways for the varying disorders, and therefore certain aspects of a musical training program will affect each disorder type differently. For example, music education uniquely benefits those with anxiety disorders through strengthening predictive coding skills. A study by White et al. (2017) determined that those with generalized anxiety disorder suffer from impaired reinforcement-based decision making, but not punishment-based decision making. In other words, for a person with anxiety, when a situation unfolds better than expected, they have difficulty learning from that experience and making positive predictions about similar future events. However, people with anxiety learn quickly from punishment, or when a situation turns out as bad as or worse than expected, leading them to make negative predictions about future events. This inevitably results in excessive worry and deficits in decision-making for those with anxiety disorders (White et al., 2017). Music education can help to improve such deficits. As previously stated, the acquisition of adequate musical knowledge allows one to understand

when and why inconsistencies occur in music, which in turn builds predictive coding skills. By strengthening the brain areas responsible for predictive coding, instilling musical knowledge in individuals with anxiety disorders can also equip them to make accurate foresights about the outcomes of situations in life—as they would about the outcome of a musical piece—reducing worry and overthinking.

Additionally, there is evidence that music-making counteracts our physiological stress response on the genomic level, which makes performing music more useful for stress reduction than other passive, relaxation methods such as reading (Bittman et al., 2013). For this reason, I suggest that active music-making may decrease anxiety in the long-term more so than merely listening to music, although proper experimentation would need to be done to support this claim. It is important to keep in mind, however, that *recreational* music-making, as the study by Bittman et al. (2013) employs, is key to lowering anxiety. This is not to say that participants with anxiety disorders should not be challenged within a music training program, but rather that the creative environment should not be one that provokes perfectionism or neuroticism in those prone to anxiety.

Depression

As for participants with major depression and other depressive disorders, a comprehensive music training program can help them to gain motivation, build self-esteem, and lift low moods. Listening to music is often cited as a remedy for a depressed mood. Joyful music can uplift someone who is feeling depressed, while sad music can potentially provide identification and consolation (van den Tol, 2016). Appropriately, in his book, *The Tao of Music*, Ortiz (1997) suggests a person create a playlist, starting with songs that match their current, low mood, and

then add songs that gradually shift into the mood that the person *wants* to feel. He argues that this can elevate the listener's mood while giving them a sense of empowerment by utilizing music to take control of their feelings. This is one example of how music listening can help patients with depression regulate their moods.

A music training program will further address the surrounding issues that contribute to persisting depression, including low self-worth. Working through a music training program and achieving the goals within it, such as learning an instrument, mastering chord-building, or finishing an original song, will work to give participants with depression a sense of purpose and accomplishment that encourages long-term rehabilitation, while the cathartic nature of music engagement will imminently relieve low moods. While empowerment is an important goal for participants with all disorder types, it is especially crucial for individuals with depression who characteristically experience a negative self-concept and deficits in motivation. Therefore, while listening to music can help with mood instability in the present, a music training program will also address the surrounding issues that contribute to persisting depression.

Bipolar Disorder

People with bipolar disorder shift between intense low and high states, so they will similarly benefit from the previously mentioned factors of a music training program that alleviate depressed moods. There is very limited evidence, however, as to how music can be used for someone with bipolar disorder who is in a manic state. What we do know is that bipolar disorder is often associated with heightened creativity (Greenwood, 2020), hence the reason why people with this illness are (albeit stereotypically) named "the artists." In fact, a plethora of successful musicians have either exhibited bipolar traits or been diagnosed with bipolar disorder (Robert

Schumann, Frank Sinatra, Nina Simone, and Kurt Cobain, among others). The negative emotions of a depressed state lead to enhanced creative thought (Akinola & Mendes, 2008), while manic states encourage productivity and the risk-taking attitude that can be necessary to pursue highly creative ideas. Although this appears to present a potential difficulty in using music to treat bipolar disorder, since the symptoms that need to be relieved are also the ones that, in part, facilitate musical output, it ultimately supports the need for a comprehensive musical training approach. Since bipolar creatives are often hesitant to receive treatment for fear that it will diminish their artistic abilities, providing a well-rounded music intervention that promotes individual creativity while reducing the harmful symptoms of the illness may be the most effective, especially when combined with standard psychiatric treatment.

Although the empirical evidence is limited, the same mechanisms that offset depressive tendencies may also thwart certain manic tendencies. For example, developing musical expertise requires heightened cognitive control which decreases impulsivity, and problems with impulse control are prominent during manic episodes. Furthermore, some extreme cases of mania induce psychotic symptoms that can also be alleviated through musical activity, which I will discuss below.

Psychotic disorders

The most prominent benefits of music for individuals diagnosed with a psychotic disorder relate to coping with the challenges that living with a chronic and debilitating mental illness entails. Solli & Rolvsjord (2015) conducted a qualitative analysis of user perspectives on how patients with psychosis viewed music therapy and found the most common themes to be freedom, contact, and well-being. Participants felt free from their illness and enjoyed having music as an

escape from the incessant focus on symptomatology that is inevitable within standard psychiatric treatment. They also felt more self-aware, noting feeling more “alive” and connected to their physical sensations and emotions, as well as feeling closer to other people (Solli & Rolvsjord, 2015). Enjoyment and well-being was also a recurring theme in the study, and many participants admitted that engaging in music therapy made them less resistant to hospitalization and treatment.

Considering these user perspectives, I contend that musical activities that are more pleasurable and relaxed will best suit those suffering from a psychotic disorder, as opposed to more challenging activities such as learning music theory or composing. That is not to say that these higher-level activities will be harmful or completely unbeneficial to individuals experiencing psychosis, but rather to reinforce the need of a holistic music training program that is able to target each patient type. Listening to music is particularly desirable for patients with psychosis because it can be soothing and enjoyable to someone in a psychotic state. Further, considering that schizophrenia and other forms of psychosis are of the most stigmatized mental illnesses, group performance exercises would serve such individuals best in that they allow participants to form bonds, feel a sense of social approval, and combat isolation.

Although the main goal of music therapy for those with psychotic disorders should be improving quality of life in these ways, there is evidence that music training can reduce psychotic symptoms. On a cognitive and neurological level, active music interventions appear to have a higher potential for decreasing psychotic symptoms than passive activities. First, active music playing and improvisation is correlated with increased executive control, the deficit of which is known to be a primary symptom of schizophrenia and schizophrenia-spectrum disorders (Beaty, 2015; Behrwind et al., 2011; Jakobson & Cuddy, 2019) Furthermore, Solli and Rolvsjord

(2015) found that active music playing and improvisation, as opposed to solely music listening, could decrease delusions and hallucinations while playing and up to a few hours after playing ended. Hypothetically, this outcome may be due to the fact that music listening, a passive rather than active activity, triggers the release of dopamine in the brain, and higher dopamine levels are associated with an increase in positive psychotic symptoms such as hallucinations and delusions (Brisch et al., 2014; Salimpoor et al., 2011). Further research is needed, however, on how music playing affects dopamine production compared to music listening. Dvorkin (1982) did a similar case study employing piano improvisation with a patient with schizoaffective disorder, a condition that involves both psychotic symptoms and mood dysregulation. Dvorkin concluded that the improvisational technique helped to reduce certain symptoms and aided the patient in acting spontaneously, diminishing paranoia, and becoming better at problem-solving in a reality-oriented manner.

Trauma-based disorders (BPD, PTSD, & DID)

I discuss borderline personality disorder (BPD) and post-traumatic stress disorder (PTSD) simultaneously here because they are frequently co-occurring disorders as the two mental illnesses that are most inextricably linked with trauma (Porter et al., 2019; Scheiderer et al., 2015). Dissociative identity disorder (DID) is also strongly associated with traumatic experience (Volkman, 1993). Therefore, a music intervention program that is meant to serve patients with trauma-induced disorders should work to rectify the characteristics of all disorders that arise from trauma.

One thing we know to be true of trauma is that it is largely held within the body. Van Der Kolk, a researcher of and expert on trauma, explains how trauma forces us into survival mode in

which we are constantly working to avoid potential threats. This activates the sympathetic nervous system, otherwise known as the "fight-or-flight" response frequently in individuals with BPD and PTSD. As for DID, Volkman (1993) notes similar mechanisms at work that "take over-automatically, adapting the psyche for survival through trauma. Severe or persistent trauma can 'lock' the brain into a survival mode long after the trauma has ceased … a chronic state may exist in which what was once an adaptation becomes a frozen pattern. Dissociative disorders may be viewed as constellations of such frozen adaptations that now present themselves in the absence of trauma" (p. 243). Part of balancing the autonomic nervous system involves improving heart rate variability (HRV), which is a sign that our body is alerting us properly and accurately (Van Der Kolk, 2014). Musical performance that requires greater regulation of the body through breath, such as singing or playing a wind instrument, is most effective at increasing HRV and therefore would be the most beneficial for recalibrating the alarm system in patients with trauma-induced illnesses (Vickhoff et al., 2013).

Van Der Kolk also writes that "the lives of many trauma survivors come to revolve around bracing against and neutralizing unwanted sensory experiences" (p. 298). This leaves trauma survivors "cut-off" from their body, or without the vertical integration previously discussed. For this reason, musical performance may presumably be of higher importance for these patients than other musical activities since it facilitates one's awareness of and connection to their own body. Singing, drumming, or playing the violin, for example, all necessitate that the performer is aware of their breath, posture, or movements in order to effectively create music. In addition to these psychophysiological benefits of playing music, becoming *skilled* at active music-making further improves areas of difficulty for those with BPD.

Two persistent characteristics of BPD in particular are low and unstable self-esteem, and difficulties with interpersonal trust, making turbulent relationships a common vulnerability for individuals with BPD (Foubert et al., 2020; Santangelo et al., 2020). Kenner et al.(2020) found musical competence to be connected to relational competence, or one's ability to form and maintain positive relationships, in patients with BPD. The researchers found that patients with BPD who participated in improvisatory music making felt more comfortable expressing themselves through performance once they had a better understanding of music and enough time to improve their musical abilities. Once the group had developed some musical competency, they were better able to work collaboratively and strengthen their connections to each other. Considering this alongside music education's capacity for improving self-esteem, providing ample music training may be more important for individuals with BPD than other psychiatric illnesses.

In considering how each aspect of a music training program serves individuals with specific disorder types, the necessity of implementing a comprehensive music intervention such as the one that I am proposing becomes apparent. A program that combines the therapeutic aspects of traditional music therapy with music education components that strengthen cognitive-behavioral skills, I maintain, will be best equipped to serve those with a range of psychiatric illnesses, especially when implemented in psychiatric hospitals and community treatment centers.

Future Directions

It is worth exploring, now, how this music training program that I have advocated for can be practically implemented in clinical and psychiatric treatment settings. I have created and

assembled a series of instructional videos and materials informed by this research that can be found at this website: mindingthepitch.com [password: fortissimo7615]. This website will be accessible to individuals receiving treatment for a psychiatric illness from partner institutions. Students can either learn individually online, or with a group of patients from their institution, should the institution choose to run this type of program using the online course as a framework. While the timing of the course can be adjusted to the individual's or institution's needs, it is intended to be a 10-week program that covers the essentials of each musical area that I have discussed in this paper and offers resources for further study and engagement.

According to the course structure that I have provided, each week will be dedicated to a new topic that will develop the students' skills as musicians. Students will ideally attend either one ninety-minute session per week, or two forty-five minute sessions. As an introduction to the course, students will gain experience listening to music and become familiar with how music functions. I recommend participants engage in a "playlist assignment" in which they create a playlist of self-selected music that begins with songs that represent their current state, and progressively shifts toward how they *want* to feel. Additionally, in the first three weeks, they will focus on music theory and musicianship, learning the basics of music notation, scales and intervals, and practice reading and performing short melodic and rhythmic phrases. This will likely be the most challenging sessions for students, and therefore an ample amount of individual attention and practice materials should be provided. In week four, students will practice singing repertoire as a group, and depending on the skillset and progress of the group, ideally sing pieces with multiple voice parts. In the fifth week, they will shift to instrumental performance. Students who already play instruments can practice and receive further guidance, while inexperienced instrumentalists may opt to work with rhythmic instruments that require less technical

knowledge. The goal should be for students to achieve some level of competence on whichever instrument they choose to play. Weeks six through nine will be a series of workshops that take students through the process of writing a song as a group, including working with lyrics, melody, harmony, and accompaniment. I recommend that the class engage in group improvisation and then work to refine their ideas in order to create the song's accompaniment. In the final week, students will conclude either by performing their song live, or recording the song. In either case, it is important for students to have a tangible product that they can be proud to have contributed towards.

In many ways, this 10-week course is meant to be a starting point to give patients the tools that they need to continue their musical edification and keep music as a resource for their lifelong rehabilitation from mental illness. I have shown that an inclusive music training program, especially in the format that I am propounding, is a viable alternative to traditional music therapy due its capacity to have a positive impact on numerous aspects of mental health. Most importantly, a music training intervention such as this combines the known psychosocial benefits of music therapy with the potential for greater accessibility to the patients who need it most. Since this course offers the positive psychological outcomes of music engagement without forwarding psychotherapeutic practices, administering this course requires nothing more than basic music education, as opposed to music therapy that necessitates a certified music therapist. Therefore, it is reasonable that advanced music students, school music teachers, or professional musicians, for example, could lead this intervention for patients in settings that do not have the resources to hire certified music therapists.

Music offers an abundance of therapeutic possibilities to individuals living with and rehabilitating from a psychiatric illness. A music training program expands upon these

possibilities to include improvements in emotional regulation, cognitive abilities, heightened self-esteem and self-concept, instilling hope for the future, increasing motivation, connecting individuals to themselves and to others, and lessening the severity of disorder-related symptoms. Most importantly, a music training program allows for the integration of all of these possibilities into one process that patients can use while in treatment and beyond. In working with those who were receiving psychiatric treatment, I developed an interest in this type of approach to implementing music in mental health care. In researching the effects of music training, I can now discern which of those patients I worked with would have benefitted from this intervention.

One of my favorite patients was an older man who had previously worked in the music industry and enjoyed great successes and experiences, but at the time found himself alone and in and out of the hospital as a result of severe depression. He would see profound improvements in his mental health while in the hospital and be discharged from in-patient treatment, but frequently returned in a worse condition than before. He told me often that he had fears about leaving the hospital, as he would be living alone with no one to turn to, nowhere to go, and no purpose. He is exactly the kind of patient who a music training program would have helped. As someone who had worked in the music industry but was not a musician himself, he already had a strong interest in music that would motivate him to learn more about it, yet his musical expertise was at a level that could be strengthened by music training. Since he reported feeling isolated, creating music in a group while in the hospital may have allowed him to form closer connections with fellow patients that he could continue outside the hospital, especially if they shared the common goal of pursuing music as a hobby. Finally, the music training that he would have received while in the hospital would give him the foundation to continue his learning after discharge, which would then provide him with a purpose in his everyday life. He is one of many

patients who I have met who needed a program like this, and there are many more to come who will benefit from a music training program as part of their psychiatric treatment.

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