

THE EFFECT OF MUSIC THERAPY ON EXECUTIVE FUNCTION SKILLS IN MALE,
INCARCERATED ADULTS IN A CORRECTIONAL FACILITY

BY

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Abstract

The purpose of the present study was to examine the effect of participation in a music therapy group on the executive function skills of male, incarcerated adults in a county correctional facility. Participants ($N=16$) were recruited from the medium-security pod in a local jail in a medium-sized Midwestern city. Eight participants ($n=8$) were randomly assigned to the treatment group, music therapy, and eight participants ($n=8$) were randomly assigned to the control group, talk-based therapy. Each group participated in four sessions over the course of two weeks. The Behavior Rating Inventory of Executive Functions for Adults (BRIEF-A) was administered once prior to the beginning of sessions and once following the conclusion of the two-week treatment period to determine if participation in music therapy significantly improved executive function skills. An analysis of covariance (ANCOVA) was run to determine the effect of two different treatment interventions on post-intervention executive function scores after controlling for pre-intervention executive function scores. Results indicated no statistically significant improvement in executive function scores post-intervention in either group. However, post-intervention raw scores improved for 100% of music therapy participants and 40% for talk-based group participants. Music therapy yielded a higher retention rate over the treatment span than the talk-based group. This study supports the need for further investigation regarding the benefits of music therapy interventions to enhance various aspects of executive function in the inmate population.

Keywords: music therapy, corrections, mental health, executive function, inmates, BRIEF-A, ANCOVA

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CHAPTER 1

Introduction

Incarcerated Adults: A Growing Population

The United States has the highest incarceration rate in the world. The most recent data published by the Department of Justice in 2011 found that adult correctional authorities supervised an alarmingly high 6,977,700 offenders, a 500% increase over the last thirty years since the “War on Drugs” was first declared by President Ronald Reagan in 1982 (Alexander, 2012; Glaze & Parks, 2012). One out of 100 adults is in jail, and one out of every thirty-two adults is in prison, on parole, or on probation (Glaze & Parks, 2012). The United States is home to about five percent of the world’s population, but we have 25 percent of the world’s prisoners, surpassing even those countries with the most repressive regimes like Russia, China, and Iran (Alexander, 2012).

In examining the incarcerated population, it is important to first define the commonly used terms within the criminal justice system. ‘Correctional institution’ is an umbrella term used to describe facilities such as jails, prisons, detention centers, residential work release units, correctional farms, industrial schools and training schools. Correctional institution can also refer to high-security hospitals for incarcerated men and women with psychiatric diagnoses; however, for the present study, ‘correctional institution’ will be used to identify the county jail in which the study took place. ‘Corrections’ involve the community supervision, confinement and rehabilitation of adults and juveniles convicted of offenses and the confinement of individuals awaiting trial or adjudication (Kyckelhahn, 2012). In the criminal justice system, incarcerated individuals are interchangeably referred to as inmates, offenders and prisoners.

‘Corrections expenditures’ fund confinement of incarcerated men and women, community supervision, rehabilitation of juveniles and adults convicted of crimes, costs of operation and employment for correctional institutions, probation and parole offices, correctional administration, pardon proceedings, and intergovernmental transfers (Kyckelhahn, 2012). The citizens and federal government of the United States spend approximately \$74 billion per year on corrections, an amount that continues to rise as more individuals are incarcerated (Kyckelhahn, 2012; National Association of State Budget Officers, 2010). Between 1982 and 2001, the total state corrections expenditures rose each year, increasing from \$15.0 billion to \$53.5 billion. Between 2002 and 2010, state expenditures oscillated between \$53.4 billion and \$48.4 billion (Aging Inmate Committee of the MSBA Correctional Reform Council, 2011; Kyckelhahn, 2012).

In describing the incarcerated population, it is also important to understand the basic sequence of events within the criminal justice system. If a crime is reported, it is the responsibility of law enforcement officers to determine if the crime has been committed. Police are criminal justice officials who enforce specific laws, investigate specific crimes, search people, vicinities, and buildings, and arrest or detain suspects. In the event there has been a crime, law enforcement identifies and apprehends the suspect(s), sometimes in the form of an arrest. After the arrest, information about the case and the accused is brought to a prosecutor, who decides if formal charges will be brought to court. If formal charges are filed, the accused is brought before a judge for an initial appearance, during which it is decided if the accused should be detained. A preliminary hearing may follow the initial appearance. If the judge finds probable cause that the accused committed the crime, the accused may be brought before a grand jury

who will hear the evidence brought against him or her and decide if there will be a trial. The accused is scheduled for an arraignment, during which he or she pleads guilty or not guilty to the charges brought against him/her. Generally negotiations are made at this stage and trial is avoided; however, the accused is either convicted or acquitted of charges (Greene, Heilbrun, Fortune & Nietzel, 2007; President's Commission on Law Enforcement and the Administration of Justice, 2012).

After a conviction, the accused is given a sentence that can include incarceration in a jail, prison, or other confinement facility, probation (which allows the individual to remain free but subject to certain conditions such as drug testing or treatment), fines, restitution (the offender must pay compensation to the victim), or in extreme cases the death penalty. Offenders sentenced to incarceration usually spend time in a local jail or a state prison. Offenders sentenced to less than one year generally spend time in jail, while offenders sentenced to more than one year generally go to prison. At this stage, incarcerated individuals interact with correctional officials who assign the accused to specific types of correctional facilities, award privileges, and punish for disciplinary infractions (Greene, Heilbrun, Fortune & Nietzel, 2007; President's Commission on Law Enforcement and the Administration of Justice, 2012). The individuals in this study are at the point in the criminal justice system where they have either received incarceration sentences in a jail, are awaiting trial for any crime, misdemeanor or felony, or are awaiting transport to a state prison.

The lifetime likelihood of imprisonment for a man in America is one in nine, while the lifetime likelihood of imprisonment for a woman in America is one in fifty-six. Data indicate Black and Hispanic men and women are more likely to be incarcerated than

White men and women (Bonczar, 2003). In fact, it is estimated that three out of four young Black men in our nation's capitol, Washington, D.C., can anticipate spending time in prison (Braman, 2004). Figure 1 shows the upward trend of the state and federal prison population from 1925-2011.

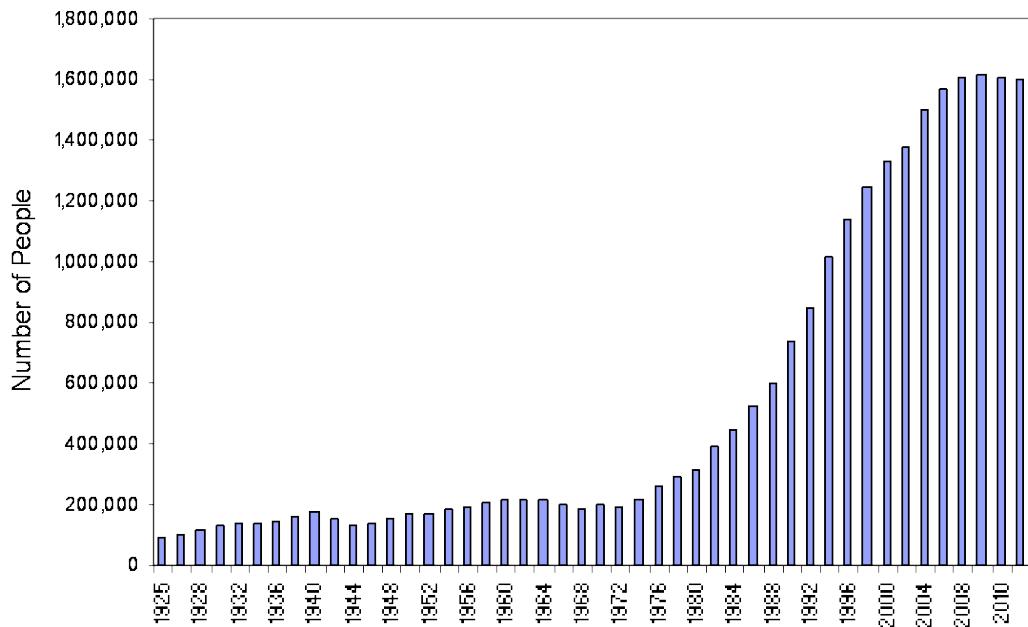


Figure 1. State and Federal Prison Population, 1925-2011.

From "Prisoner Series," by the Bureau of Justice Statistics. Copyright 2011 by the Department of Defense. Used with permission of the author.

As the criminal justice system continues to turn to incarceration as a way to prevent crime, increased focus has been on releasing nonviolent offenders. However, many incarcerated individuals present with several behavioral and rehabilitative concerns and are not receiving adequate treatment to target these concerns before they are released. Some of these common problems include behavioral issues, particularly associated with antisocial behavior, psychological resistance and defensiveness, lack of empathy, and the presence of criminal thinking patterns (Morgan, Winterowd, & Fuqua, 1999). It has been

theorized that improving these problems may lead to a process of change that is necessary for offenders to successfully reenter society following incarceration. The United States' high rates of incarceration and the release of inmates without providing treatment targeting maladaptive behaviors associated with offending are inextricably connected to recidivism.

The Recidivism Problem

According to the United States Department of Justice (2013), recidivism is “measured by criminal acts that resulted in re-arrest, reconviction, or return to prison with or without a new sentence during a three-year period following the prisoner’s release” (About This Topic section, para. 1). The most recent recidivism data published by the Bureau of Justice Statistics in 2008 found that 1,180,469 individuals were at-risk of being incarcerated again (Bonczar & Glaze, 2008). A popular study conducted on the recidivism of offenders released from prison in 1994 discovered that among nearly 300,000 prisoners released in fifteen US states, 67.5% were rearrested within three years (Langan & Levin, 2002).

Unlike traditional due process and law enforcement for incarceration, a national standard or requirement for an effective reentry of inmates does not exist (Arungwa & Solomon Osho, 2012). Because of this, it is left to individual correctional facilities’ discretion to decide how to handle inmate reentry. While some jails provide rehabilitative programming and evidence-based support for reentry, others choose to align themselves with the punishment model and do not provide programming aimed at helping inmates with reentry. Many argue that denying inmates rehabilitative programming is necessary to “teach them a lesson” and will reduce costs of incarceration

for the government. However, others argue that correctional facilities are in fiscal crisis and rehabilitative programming aimed at successful reentry could decrease recidivism and improve the fiscal crisis over time (Arungwa & Solomon Osho, 2012).

Identifying factors that contribute to recidivism is important in understanding and trying to solve the problem. Perhaps most important is understanding the difficulties faced by offenders trying to re-enter the community following incarceration. Individuals who are released from a correctional institution, with or without parole, often face challenges finding work, housing, continuing education and managing substance abuse (Makarios, Steiner & Travis, 2010; Petersilia, 2001, 2003). These individuals often leave the correctional institution with little to no money or resources and find it difficult to move past their criminal record, even though they have served their sentence.

Successful re-entry into society is difficult and often unlikely for most inmates (Makarios, Steiner & Travis, 2010; Petersilia, 2001, 2003, 2005). A study following men and women released from prison in Ohio found that fewer than 20% of the individuals maintained stable employment during their first year back in the community, and 30% were unable to find work during the entire study period. The study further found that one fourth of the parolees was rearrested for a new crime within twelve months of reentry. In addition, parolees lived in an average of two residences, with 30% living in three or more locations during the study period (Makarios, Steiner & Travis, 2010).

Phillips and Lindsay (2011) investigated how individuals who reenter society from prison use coping strategies using a sample of individuals who recidivated following a previous release from prison. It was found that the main coping strategy employed by inmates reentering society is avoidance, described as an initial optimism

about being released, followed by craving substances, facing practical barriers, and feeling overwhelmed. This resulted in avoidance of problem and emotional management and abuse relapse, which lead to recidivism (Phillips & Lindsay, 2011). These findings suggest implications for providing treatment programs aimed at improving adaptive coping mechanisms while the individual is incarcerated.

Lack of access to rehabilitative treatment is a barrier to successful reentry, because many inmates complete their sentence without receiving treatment that targets social skills deficits, encourages problem solving and addresses risk-taking behaviors (Petersilia, 2003).

Research indicates that prison inmates have significantly lower literacy levels than non-inmates (Greenberg, Dunleavy, Kutner, & White, 2007). Furthermore, 41% of state prison inmates do not have a high school diploma or a GED (Harlow, 2003).

Unfortunately, recent trends also show that participation in correctional programming has decreased, perhaps due to the increased emphasis on control and punishment, rather than rehabilitation and care (Dickinson, Odell-Miller, & Adlam, 2013; Lynch & Sabol, 2001; Petersilia, 2001, 2003).

The shift toward punishment and away from rehabilitation contradicts the research findings that treatment interventions in the correctional setting often reduce recidivism rates, which has important implications for correctional institutions and investment in rehabilitative programming (Drake, Aos, & Miller, 2009). Identifying factors that contribute to criminality is essential for designing effective rehabilitative treatment, thereby increasing the chances of successful reentry into society and decreasing recidivism rates.

Executive Function and Criminality

Impaired neuropsychological functioning may play a role in the development of violent and aggressive behaviors. Existing literature points to a potential link between criminality, the prefrontal cortex and executive functioning. Executive functions can be understood as a body of various skills related to regulatory control over thought and behavior involving the inhibitory response, flexible shifting of actions to meet task demands', emotional control, self-monitoring, goal-directed or intentional action, working memory, and organization of materials. Understanding the relationship between criminality and executive dysfunction is important for the development of rehabilitative programs in correctional institutions (De Brito & Hodgins, 2009; Nunn, Hanstock, & Lask, 2008).

The prefrontal cortex, located within the frontal lobes, is associated with the highest cognitive functions including working memory, selective attention, action-planning competency, forethought, self-control and a very basic regulation of affective-emotional processes (De Brito & Hodgins, 2009; Nunn, Hanstock, & Lask, 2008). Studies suggest that there is a neuropsychological dysfunction correlated with crime in general, and prefrontal dysfunction (also termed 'executive dysfunction') appears more among inmates who have committed violent crimes (Baker & Ireland, 2007; Barbosa & Monteiro, 2008; Brower & Price, 2001; De Brito & Hodgins, 2009; Mullin & Simpson, 2007).

De Brito and Hodgins (2009) propose there are certain aspects of executive function that are important to understand the research on offenders. First, executive control is necessary to deal with novel tasks that require us to plan, organize, formulate a

goal, and choose between alternatives, taking consequences into consideration. Second, executive functions are involved in the suppression, inhibition and replacement of automatic responses and are essential when it is necessary to avoid inappropriate responses (Rabbitt, 1997). Barbosa and Monteiro (2008) conducted a study to determine if individuals who repeatedly participate in forms of non-violent crime suffer from executive dysfunction using a sample of inmates convicted of property crimes and a non-inmate control group. Administration of the Behavioral Assessment of Dysexecutive Syndrome concluded that the group of recurrent inmates performed significantly worse than the control group on the battery (Barbosa & Monteiro, 2008). These findings support the research of De Brito and Hodgins (2009) by interpreting the low scores in terms of lack of control over behavior and not considering consequences.

A critical review of articles relating evidence of frontal lobe dysfunction with violence or crime found reports of high rates of neuropsychiatric abnormalities in people exhibiting violent and criminal behavior. Specifically, focal orbit frontal injury was associated with increased aggression, and executive dysfunction tended to increase the likelihood of future aggression (Brower & Price, 2001). The frontal lobe and its relation to executive function will be discussed more in depth in chapter two.

The results of psycho physiological and neuropsychological studies tend to show that prefrontal dysfunction is associated with antisocial behaviors, which is linked to criminal behavior. Because many inmates exhibit behaviors typical of executive dysfunction, many treatments are designed to improve these skills.

Current Treatments Provided in the Correctional Setting

The majority of existing treatment programs developed for inmates focus on criminogenic needs. Criminogenic needs are defined as human deficits that are directly related to the tendency to commit crime. These needs include impulsivity, weak interpersonal skills, poor verbal intelligence, risk-taking behaviors, poor problem solving and self-control skills, an early onset of antisocial behavior, and various employment, educational, vocational, and parental skill deficits (Gaes, Flanagan, Motiuk, & Stewart, 1999). As many of these skill deficits are associated with executive processes, it is logical for rehabilitative programs to target executive function skills.

Behavior management and cognitive skills training programs within the correctional setting are perhaps the most common forms of treatment for offenders (Gaes et al., 1999). Cognitive-behavioral therapy (CBT) for offenders has provided evidence-based support for effecting behavioral change and improving coping among offenders with and without mental health problems, substance abuse, and sex offending. CBT emphasizes problem solving, exposure, skill training, contingency management, and behavior therapy (Shelton, Sampl, Keston, Zhang, & Trestman 2009). Shelton et al., (2009) explored the use of Dialectical Behavior Therapy (DBT), a version of CBT, which emphasizes emotional regulation, interpersonal effectiveness, distress tolerance, core mindfulness, and self-management skills, with a group of offenders. It was hypothesized that DBT would decrease aggression, impulsivity and psychopathology as well as improve coping and reduce targeted behaviors. Participation in DBT resulted in significant reduction in the targeted behavior and supports the use of DBT with aggressive inmates in the correctional setting (Shelton et al., 2009).

Other studies have examined the effectiveness of using Enhanced Thinking Skills (ETS) training with offenders who displayed executive dysfunction. Mullin and Simpson (2007) conducted a study in which offenders participated in ETS, which included practical tasks, role-play, games and group discussions. Themes were used for each session and included decision making, problem solving, relationship between thoughts, emotions and behavior, and social cognition. The relationship between outcomes following ETS and pre-measured executive function was examined, and it was found that offenders improved on both the outcome measures following ETS and that executive functioning predicted this improvement (Mullin & Simpson, 2007).

Although a number of treatment options may be provided in the correctional setting, a critical review of the literature found that most treatments for adult inmates only had modest effects, with behavioral and cognitive skills training seeming the most promising (Gaes, Flanagan, Motiuk, & Stewart, 1999). Gaes et al., (1999) also noted that multimodal treatments, ones that address several of the criminogenic needs, tend to work better than those in isolation. Furthermore, treatment should be designed to match a variety of inmate learning styles to encourage responsivity. The success or failure of a treatment program within the correctional setting often depends on responsivity and therefore is very important (Gaes et al., 1998).

Although many correctional facilities provide rehabilitative programs for inmates, recidivism rates remain high and treatment non-compliance persists, suggesting the current model for treatment may not be adequately addressing the skill deficits found in the adult incarcerated population. Shaw and Morgan (2011) examined inmate attitudes toward treatment within the Kansas Department of Corrections and found that inmate

attitudes toward treatment were predictive of the number of mental health treatment sessions inmates received. Positive help-seeking attitudes were correlated with a decreased number and severity of disciplinary infractions (Shaw & Morgan, 2011). Implications of these findings suggest that it is integral to provide treatment in the correctional facility that is immediately motivating, improves inmates' attitudes toward treatment, creates and maintains responsiveness and targets functional cognitive and behavioral skills.

Music Therapy as a Treatment Alternative

Because of the nature of the correctional setting, with its focus predominantly on punishment rather than rehabilitation, the often challenging behaviors presented by offenders, and the current budget crises, treatment providers are faced with the difficulty of providing treatment which balances care and control (Dickinson, Odell-Miller & Adlam, 2013). In order to reduce recidivism rates, treatment should address executive processes necessary for successful reentry into society as well as ensure treatment responsiveness and compliance.

Music therapy, as defined by the American Music Therapy Association (2013), is “the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program.” Music therapists have worked in both forensic and correctional settings with incarcerated adolescents and adults, addressing physical, psychological, emotional, social, behavioral, cognitive, communicative and spiritual difficulties using receptive methods, improvisation, re-creative experiences, and

composition. Clients do not need to have prior musical knowledge or experiences to participate in music therapy (AMTA, 2013; Codding, 2002).

The music therapist working within a correctional setting can use music interventions to improve reality testing and problem-solving skills, improve respect for others, develop interpersonal skills, decrease impulsivity and aggression, improve relaxation and coping mechanisms, accept responsibility for thoughts, feelings, and behaviors, improve physical conditioning, develop healthy leisure skills, and explore emotions and mood states (American Music Therapy Association, 2013; Codding, 2002). Music therapy interventions provide rewarding and focused musical interactions that do not require a verbal response and therefore can reach inmates from diverse cultural and educational backgrounds in a non-threatening, non-competitive environment (Codding, 2002). Most music therapy research within this speciality has been conducted within the forensic setting, secure hospitals that house inmates with psychiatric disorders. The current study will be conducted in a correctional setting, where inmates may or may not have psychiatric disorders. Music therapy in the correctional facility will be discussed more in chapter two. Additional research on the effectiveness of music therapy in the correctional setting is needed.

Summary and Purpose Statement

Limitations of traditional treatment approaches for the growing number of incarcerated adults exist, particularly in regard to decreasing recidivism rates and encouraging treatment compliance. The correctional setting presents several unique challenges for the treatment provider, including a focus on punishment rather than rehabilitation, a lack of funds to support and provide varied treatment to incarcerated

individuals, and the diverse offender population. Literature suggests offenders may have executive function skill deficits, such as the ability to control impulsive urges and regulate emotions. Very little research has been conducted on music therapy in the correctional setting. Continued research is needed to determine if music therapy is effective in improving skills associated with executive function. The purpose of the present study was to examine the effect of participation in a music therapy group on the executive function skills of male, incarcerated adults in a county correctional facility.

CHAPTER 2

Review of Literature

Criminality and Mental Health

Criminality is a legal term. It is not, in and of itself, a medical or psychiatric diagnosis, syndrome, or illness. Criminality refers to a pattern of human behavior or a specific act of violating a law (Gaes, Flanagan & Motiuk, 1999). The key factors associated with criminality and recidivism are an established history of benefitting from criminal activity, a social environment that tolerates and encourages crime and criminals, personal attitudes and values which support criminal behavior, and a personality type that finds high-risk, impulsive behavior rewarding (MacPhail & Verdun-Jones, 2013).

In general, criminality involves intention or negligence. Therefore, if an individual lacks criminal intent or negligence, they are typically not convicted of a crime. This controversial idea is at the core of the exoneration debate, but it is not the goal of the law to deter or punish behavior that did not involve criminal intent or negligence. The most common reason an individual would not be convicted of a crime is if he or she is diagnosed with a severe mental illness, which can result in behaviors and symptoms associated with criminality (Skeem, Manchak, & Peterson, 2010).

Although it is possible for someone to be found “not guilty by reason of insanity” (NGRI) or “guilty but mentally ill” (GBMI) and sentenced to time in a high-security hospital, it is uncommon. More often, offenders with mental health problems are sent to a non-medical correctional institution (Greene, Heilbrun, Fortune, & Nietzel, 2007). A report published by the Bureau of Justice Statistics in 1999 found at midyear 1998 that 16% of state prisoners, 7% of federal prisoners, and 16% of jail inmates had a mental

health problem, defined as recent history of mental diagnosis or symptoms of a mental health illness (Ditton, 1999). For comparison, a similar report published six years later by the Bureau of Justice Statistics found at midyear 2005 more than *half* of all jail and prison inmates had a mental health problem, representing 56% of state prisoners, 45% of federal prisoners, and 64% of jail inmates (James & Glaze, 2006). Figure 2 illustrates this change.

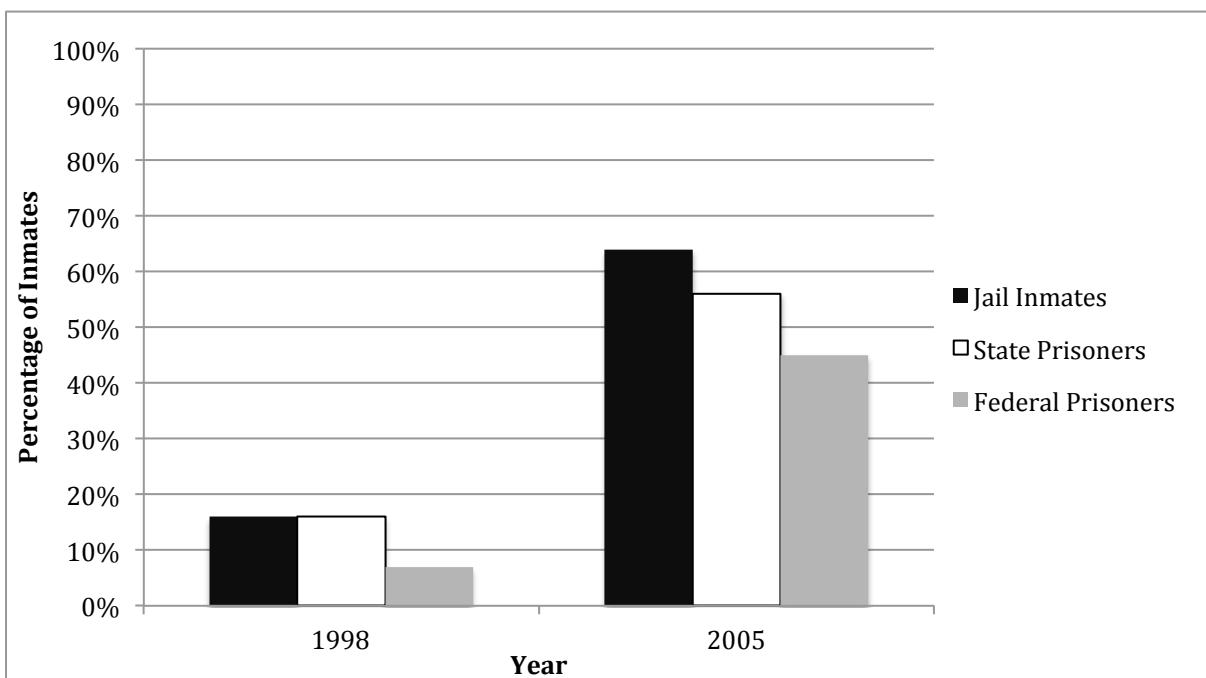


Figure 2. Percentage of U. S. prisoners with mental health problems in 1998 and 2005.

Figure by author. Data courtesy of Department of Justice.

The latter study reports that 54 percent of jail inmates reported symptoms that met the DSM-IV-TR criteria for mania, about 30 percent of jail inmates reported symptoms for major depression, and 24 percent reported symptoms that met the criteria for a psychotic disorder. Furthermore, nearly one fourth of jail inmates with a mental health problem had been previously incarcerated three or more times. About 76 percent of jail

inmates with a mental health problem also met the criteria for a substance-related disorder. James and Glaze (2006) further found that state prisoners who had a mental health problem were twice as likely as those without to have been homeless in the year before their arrest.

It is often difficult to discern symptoms associated with criminality with symptoms of mental illness, because both can impair judgment and violate social norms. However, the literature suggests that the following mental disorders are more commonly found in the criminal justice system than others: mood disorders (major depression, anxiety disorders, bipolar disorder), psychotic disorder, schizophrenia, schizoaffective disorder, schizophreniform disorder, substance-related disorders, traumatic brain injury, adjustment disorders, autism-spectrum disorder, delirium and, more closely linked to criminality than the others, impulse control disorders, paraphilic disorders, and personality disorders (Baune, Miller, McAfoose, Johnson, Quirk, & Mitchell, 2010; Bonta, Law, & Hanson, 1998; Milton, Duggan, McCarthy, Costley-White, & Mason, 2007; Silver, Felson, Vaneseltine, 2008; Tiihonen, Isohanni, Rasanen, Koiranen, & Moring, 1997; Yang, Wong, & Coid, 2010).

Personality disorders, particularly Antisocial Personality Disorder, characterized by impulsivity and violence, are perhaps the most common psychiatric diagnoses associated with criminality (American Psychiatric Association, 2013; Davison & Janca, 2011; Howard, McCarthy, Huband, & Duggan, 2013). Antisocial Personality Disorder is characterized by lack of empathy, shallow affect, impulsivity, deceitfulness, aggressiveness, irresponsibility, and failure to conform to social norms with respect to lawful behaviors (American Psychiatric Association, 2013; Davison & Janca, 2011;

Freestone, Howard, Coid & Ullrich, 2012; Yang, Wong, & Coid, 2010). Longitudinal analyses have found that antisocial personality disorder is predictive of aggressive behavior (Crocker et al., 2005; Kennealy, Skeem Walters & Camp, 2010). Howard (2006) found that offenders with personality disorders are becoming increasingly more likely to serve prison sentences than be detained in high-security hospitals. The predominant treatment needs for individuals with personality disorders are interpersonal conflict and aggressiveness (Daffern & Howells, 2009). Unfortunately, studies show that a large number of offenders with personality disorders fail to complete treatment during incarceration (McCarthy & Duggan, 2010).

If an individual diagnosed with a mental disorder is convicted of a crime, it is the law's responsibility to provide treatment. The American Bar Association (ABA) approved a set of ABA Criminal Justice Standards in February 2010 outlining updated ethical treatment of prisoners. Standard 23-6.11 outlines services for prisoners with mental disabilities. According to this mandate, correctional facilities have a responsibility to provide "appropriate and individualized mental health care treatment and habilitation services" for offenders with "mental illness, mental retardation, or other cognitive impairments" (American Bar Association, 2011). Correctional facilities are also required to develop and use a protocol for identifying, managing and documenting offenders who exhibit behavior indicative of mental illness (Standard 23-2.1 and 23-2.5). Inmates with mental illness should be provided with appropriate housing accommodations and treatment opportunities. Finally, inmates diagnosed with severe mental illness are not to be housed in settings that may increase suicide risk or exacerbate mental health symptoms (American Bar Association, 2011).

Many offenders do not have an official mental health diagnosis but still exhibit skill deficits and psychological problems. The current debate is whether the focus in the criminal justice system should be on rehabilitation or punishment for these individuals. Benson (2003) discusses how up until the mid-1970s, the criminal justice system focused on rehabilitation of prisoners through the development of occupational skills and working on psychological issues, such as aggression, that could hinder reentry success. Today, correctional institutions are viewed as the primary tool to deter crimes through punishment, a result of the “get tough on crime” movement, which began in the 1970s (Alexander, 2012; Greene, 2002).

The inherent philosophical difference between corrections, which is currently focused on punishment, and professions based in psychology, which are focused on rehabilitation, creates a lack of treatment providers within the criminal justice system at a time when a large percentage of the correctional population has a mental health disorder or exhibits symptoms and/or behaviors indicative of a mental health problem (Benson, 2003; James & Glaze, 2006; Skeem, Manchak & Peterson, 2010).

The National Alliance on Mental Health (NAMI) argues that the correctional institution has become a “psychiatric hospital” of sorts, but unfortunately inmates with mental health problems are not always provided appropriate care and treatment (NAMI, 2012). One possible reason for the emergence of the correctional institution as a fill-in mental health hospital is deinstitutionalization, which began in the 1960s when Congress passed the Community Mental Health Centers Act in an attempt to shift the mental health system’s emphasis from institutional care and segregation to community-based supports (Reuland, Schwarzbeld, & Coun, 2009; Unkefer & Thaut, 2005).

Deinstitutionalization resulted in the closure or downsizing of many of our nation's official psychiatric facilities, particularly during the 1990s. The goal was to provide community-based outpatient care to individuals with mental disabilities upon closure of these facilities, but unfortunately many states have failed to provide continued mental health services in the midst of closing down psychiatric hospitals. This has led to concerns about "criminalizing" mental illness (NAMI, 2012; Reuland, Schwarzbeld & Coun, 2009; Skeem, Manchak & Peterson, 2010; Unkefer & Thaut, 2005). According to the Bureau of Justice Statistics, more Americans receive mental health treatment today in a correctional institution than in hospitals or treatment centers (Carmody, 2008).

It is important to understand that evidence does not support the stereotype that all individuals with mental health problems are violent or commit crime and not all people who commit crime are diagnosed with mental disorders (Reuland, Schwarzbeld, & Coun, 2009). In fact, according to MacPhail and Verdun-Jones (2013), it is more likely for people with mental health problems to be the victims of violence than perpetrators. Research does confirm that an increased number of individuals with mental health problems are coming into contact with the criminal justice system, making treatment for inmates a priority concern. Executive function is one specific area of mental health that has been researched in relation to criminal behaviors.

Executive Function in the Incarcerated Population

The term "executive function" is a meta-construct used to describe a range of behavioral competencies and cognitive processes, which include impulse control, problem-solving, planning, sequencing, sustained attention, emotional regulation, multitasking, monitoring of one's own behavior, decision-making and the ability to deal

with novelty (Brower & Price, 2001; Chan, Shum, Toulopoulou & Chen, 2008).

Executive dysfunction is an area of interest and debate in the clinical field, but several studies have shown that impairment in executive functioning is related to offending.

The frontal lobes make up approximately one-third of the cortex and are located behind the forehead, above the eyes, and beneath the front half of the skull. The frontal lobes consist of the primary motor cortex, premotor cortex, Broca's area for language expression, and the prefrontal cortex. The frontal lobes are considered the executive center, as they are responsible for goal-oriented behavior (Brower & Price, 2001; Nunn, Hanstock & Lask, 2008). Executive function is widely understood as a function of the prefrontal cortex; however, it is not exclusively a function of the prefrontal cortex, given that the prefrontal cortex is involved in other neuropsychological processes that are not considered executive processes, such as speech and sensory-motor activities (Barkley, 2011).

The origin of the modern understanding of executive function can be linked to the theories of Bekhterev in 1905-1907, when he observed that damage to the frontal lobe resulted in the breakdown of goal-directed behavior, which he understood to be the primary function of the prefrontal cortex. Eventually this came to be understood as "frontal lobe syndrome," which later developed into "dysexecutive syndrome" and now "executive dysfunction." Executive function can be operationally defined as self-regulation across time for the attainment of one's goals typically in the context of others (Barkley, 2008).

Dysfunction affecting structures in the frontal lobe can result in disinhibition, impulsivity, and behavioral problems. Individuals can be born with disorders that have a

profound effect on the frontal lobes, such as attention deficit hyperactivity disorder, or can suffer a frontal lobe head injury. In many cases of frontal lobe trauma, the individual experiences drastic changes in personality, often becoming apathetic and impulsive. Antisocial behavior is related to reduced frontal lobe activity, regardless of suffering a trauma (Nunn, Hanstock & Lask, 2008).

There are several capacities needed for goal-directed behavior including foresight, hindsight, self-awareness, a sense of time and inhibition. Other capacities are central to the concept of executive function. First, *working memory* is needed to hold information in mind over time, such as goals, and to plan. Working memory is also important in problem solving. *Planning* allows us to explore various strategies for action and is necessary to determine what is to be done, when it is to be done, and how it is to be done. *Problem solving* allows us to generate several possible alternatives for action in order to construct an initial plan and adapt that plan if necessary. It also allows us to consider consequences for choices. *Self-monitoring* can be understood as sensitivity to self-error and is necessary to self-supervise actions and consequences. *Interference control* is an inhibitory capacity that is needed to protect the other executive functions from distractions as well as maintain impulse-control over behavior. *Self-motivation* is the will needed to set and attain goals. *Self-regulation of emotion* is the ability to self-regulate strong emotions. Difficulties in one aspect of executive functioning tend to disturb other aspects (Barkley, 2011).

Executive dysfunction has been associated with increased impulsivity, aggression, and violence (Best, Williams, Coccato, 2002; Marsh & Martinovich, 2006). Neuropsychological studies have consistently shown a link between executive

dysfunction and violent offenders. Broomhall (2005) investigated the extent of executive dysfunction in a population of 25 violent, incarcerated offenders who were split into either a ‘reactive’ group or an ‘instrumental’ group. In order to be categorized as ‘primarily reactive,’ there had to be an obvious lack of planning and evidence of impulsivity in the violent behavior. In order to be categorized as ‘primarily instrumental,’ there had to be a clear, goal-oriented and planned nature to the violent act. It was found that the primarily reactive group was significantly impaired on tasks that assessed higher-order executive functions compared to the primarily instrumental group, suggesting that primarily reactive offenders may have difficulty controlling behavior, and primarily instrumental offenders may *choose* not to control their behavior and therefore may not benefit from treatment as much as reactive offenders (Broomhall, 2005).

Hancock, Tapscott, and Hoaken (2010) confirmed the findings of Broomhall after conducting a study that tested 77 incarcerated offenders in a federal facility on a battery of executive functioning measures. Offenders were found to have pervasive executive dysfunction compared to the general population. Hancock et al. (2010) propose the development of interventions to manage or reduce the risk of future violence by targeting executive function improvement during offender rehabilitation.

Executive dysfunction has also been linked to antisocial behavior, including suicidal tendencies, problems with decision-making, self-control/regulation, and substance abuse (Beaver, Wright & Delisi, 2007; Herrero, Escorial & Colom, 2009; Morgan & Lilienfeld, 2000; Keilp et al., 2013; Jollant et al., 2010; Beaver, Wright & Delisi, 2007). A meta-analytic review of studies investigated the link between antisocial behavior and neuropsychological measures of executive function using 39 studies with a

total of 4,589 participants. Overall, the antisocial groups performed .62 standard deviations worse on tests of executive function than comparison groups (Morgan & Lilienfeld, 2000). A study conducted by Coolidge, Thede, and Jang (2002) supported these findings using a sample of 314 twins. It was found that executive function deficits and personality disorders were significantly heritable.

Self-regulation, a core aspect of executive function, is important for interpersonal functioning. Rawn and Vohs (2006) found that a person's ability to control their unwanted impulses strongly and positively predicts their interpersonal abilities. Low self-control, often demonstrated within the incarcerated population, can result in violent, destructive and selfish interpersonal responses (Rawn & Vohs, 2006).

During high-risk decision-making processes, there is decreased activation of the prefrontal cortex. Decision-making impairment has been linked to disorders including substance abuse, aggression, and suicidal behavior, which has serious implications for the incarcerated offender who is already at high risk of these problems (Jollant et al., 2010; Keilp et al., 2013; Mumola, 2005). Furthermore, impairment in executive functioning can deter behavior change, particularly in substance abuse, which is highly prevalent in the correctional population (Blume & Marlatt, 2009).

Executive dysfunction can result in decreased emotional regulation (Bechara, Damasio & Damasio, 2000; Ochsner & Gross, 2008). Research on the role of emotions in executive dysfunction has shown proneness to irritation, emotional instability, and indifference toward surroundings. Executive dysfunction can result in the inability to use private speech to inhibit, regulate, or moderate strong emotions (Oschsner & Gross, 2008). Hoaken, Allaby, and Earle (2007) specifically examined executive functioning

and the understanding of emotional expressions in incarcerated violent and non-violent offenders. Compared with controls, both offender groups scored significantly worse on measures of executive function, and violent offenders scored significantly poorer on the facial-affect recognition task than non-offenders and controls. Executive deficits were correlated with difficulties accurately interpreting facial affect (Hoaken, Allaby & Earle, 2007).

One potential target area to further reduce recidivism within the correctional population is to address executive function deficits. Improving executive functioning in offenders who exhibit deficits may allow these individuals to benefit more from other treatments and further reduce recidivism rates. Some current treatments for improving executive functions include cognitive rehabilitation (Cicerone et al., 2006) and mindfulness training (Baer, 2003).

Cognitive rehabilitation interventions have been used with patients with traumatic brain injury who exhibit executive dysfunction and have included goal-management training, problem-solving training and interventions for behavioral and emotional regulation (Cicerone et al., 2006). Mindfulness training has been used to encourage self-regulation, shifting of attention and emotional control. Mindfulness training involves bringing one's attention to the internal and external experiences occurring in the present moment. Mindfulness training can be used in conjunction with cognitive behavioral therapies to improve executive functioning (Baer, 2003).

Executive dysfunction can result in increased impulsivity and aggression, decreased empathy and control of emotions, loss of self-motivation and control, difficulty with problem solving and a wide array of behavioral issues (Hanlon, Rubin, Jensen &

Daoust, 2010). Due to the prevalence of mental illness and evidence of executive dysfunction in offenders, there is need for treatment within the criminal justice system.

Non-Musical Treatments

It is the responsibility of the criminal justice system to provide mental health services to incarcerated individuals who require treatment (American Bar Association, 2011). Some correctional facilities provide programming for offenders on top of the required mental health services, including programs geared toward improving social skills and encouraging a successful re-entry back into society following incarceration (Douglas County Sheriff's Office, 2013; U.S. Department of Justice, 2013). While these treatment programs exist, program retention continues to be a problem (McMurran & McCulloch, 2007).

Elliott (2002) asserts that providing treatment within the correctional setting is often very challenging and requires skill, patience, and perseverance. This, combined with the very nature of the correctional institution, often makes programming quite difficult and/or restricted. Still, several correctional institutions have committed to providing treatment for incarcerated offenders aimed at reducing recidivism, which has financial benefits for the correctional institution. The majority of these programs are cognitive-skills programs that focus on promoting prosocial and interpersonal skills, and they appear to have reduced recidivism by about 10 percent over the past thirty years (Ashford, Wong, & Sternbach, 2008; Ross & Hoaken, 2010).

According to the Bureau of Justice (2012) and a review of several local correctional facilities' programming, some of the most popular treatment programs provided to incarcerated individuals are addiction and substance abuse recovery, life

skills and family reintegration, employment and job skills, education, religious programs, anger management and reentry assistance. At this time, a low number of correctional institutions provide arts-based treatment opportunities, such as music, art, drama or writing therapy. Proctor, Hoffmann, and Allison (2012) describe an interactive journaling treatment intervention for incarcerated offenders and its effect on recidivism rates. The recidivism rate for the journaling group was significantly lower than the control group (Proctor, Hoffmann, & Allison, 2012).

Prior to the 1970s, rehabilitation of offenders was a widely accepted goal of correctional facilities. However, with the correctional institution's more recent focus on punishment, many individuals in and out of corrections are skeptical of treatment effectiveness. Treatment effectiveness has serious implications for the willingness of correctional authorities to invest in treatment, particularly when the focus is not on rehabilitation to begin with. The focus in the correctional institution is currently on providing "best practice," which involves structured cognitive-behavioral approaches that focus on addressing risk factors for recidivism (Anstiss, 2003).

Evidence of the effectiveness of some treatment programs reducing recidivism is strong (Anstiss, 2003). However, other correctional treatment programs do not seem to reduce recidivism (Andrews et al., 1990). At best, current, traditional treatment in correctional facilities may or may not be effective, depending upon several factors. Furthermore, treatment compliance within the correctional facility is an issue. Andrews et al., (1990) suggest a few reasons for treatment non-compliance within the correctional institution. First, treatment is not resulting in responsivity. That is, treatment is not effectively matched to the various inmate learning styles. Second, treatment is not

targeting the wide array of criminogenic needs, and third, treatment is not being delivered to higher risk cases (Andrews et al., 1990). McMurran and McCulloch (2007) confirmed these findings.

Treatment retention continues to be a problem within the incarcerated population. Several reasons for treatment non-compliance have been cited, including non-motivation for treatment, feeling as though traditional treatment options are slow and patronizing or too demanding, and feeling generally dissatisfied with treatment options (McMurran & McCulloch, 2006). Because treatment compliance is an integral part of any program and is necessary to reduce recidivism following incarceration, it is essential to provide a treatment option that encourages retention and targets functional skill areas.

Music Therapy and Executive Function Skills

Music therapy has been used within correctional and forensic settings with both incarcerated adolescents and adults. Music therapists have worked in jails, prisons, juvenile detention centers, maximum-security hospitals, group homes, sanction programs, and community-based parole and probation programs. A number of studies have provided information regarding the efficacy of music therapy within these challenging settings and have found music therapy to be effective in treating individuals who have various psychological, physical, behavioral, emotional, social, cognitive, communicative and/or spiritual needs (American Music Therapy Association, 2006; Fulford, 2002; Kaser & Bullard, 2007).

Music therapy, provided within the cognitive-behavioral model, is a viable “best practice” treatment option for the correctional facility. The number of music therapists working in correctional settings has been growing since the 1990s (Davis, Gfeller, &

Thaut, 2008; Dickinson, Odell-Miller & Adlam, 2013; Fulford, 2002). A survey conducted in 2002 found that 132 music therapists were currently working in either correctional or forensic settings, making music therapy in corrections a relatively small, specialized field (Coddington, 2002).

Thaut (1987) examined music therapy in corrections, asserting that incarceration results in physical freedom limitations, lack of reality stimulation and loss of emotional ties, which can lead to anger and major behavioral problems. Music therapy research in correctional settings suggests music can be used in a therapeutic way to alter mood and anxiety through arousal shifts, which is necessary for behavioral modification, and can change thoughts about self in incarcerated persons (Davis, Gfeller & Thaut, 2008; Fulford, 2002; Unkefer & Thaut, 2005). The vast majority of incarcerated clients report reduced stress and anxiety on self-report scales following music therapy sessions. Preliminary data collected on Likert-type scales over four months show the mean for 76 clients on the stress scale (1-10) was 5.49 before and 2.30 after music therapy. Data were collected at a Midwestern county jail (Ellis, 2012).

Music therapy in the correctional setting allows the incarcerated individual to express emotions and feelings in a safe, structured environment, which may allow the offender to properly identify and organize thoughts and emotions, learn discipline, improve social skills, and learn impulse control through reducing aggression and hostile behavior (Cohen, 1987; Davis, Gfeller & Thaut, 2008; Kaser & Bullard, 2007). A study investigating the effects of art therapies with prison inmates found that participation in arts-based therapy resulted in an increased acceptance of one another and the environment, which improved both staff and peer interactions following arts-based

therapy (Gussak, 2004). Smeijsters et al. (2011) confirmed these findings and found participation in music therapy improved respect for other incarcerated offenders as well as controlled impulsivity. A systematic review of research studies on arts-based therapies with offenders concluded that arts therapies were consistently found to improve arousal levels, emotional literacy, and quality of life (Meekums & Daniel, 2011)

Music therapists address several non-musical goal areas that have relevance for the correctional setting. These goal areas include: reducing/managing stress, anxiety, anger, and depression (Cevasco, Kennedy & Generally, 2005; Jackson, 2010; Hakvoort, 2002), substance abuse problems (Ghetti, 2004), emotional regulation (Gilboa, Bodner, & Amir, 2006), social skills training (Gooding, 2011), coping (Silverman, 2011), domestic violence (Teague, Hahna, & McKinney, 2006), reducing aggression (Smeijsters & Cleven, 2006), and sex offender treatment (Gallagher & Steele, 2002).

Several music interventions are being used within the context of music therapy to address the multi-faceted problem areas within the incarcerated population. Many of these interventions, although not explicitly stated, relate to improving skills related to executive function. Music therapy interventions can be used to teach incarcerated individuals how to reduce the complexity of multifaceted problems by breaking them down into smaller, more manageable problems. This process can target executive function as a whole or can address specific aspects of executive function, such as impulsivity and problem solving. Incarcerated individuals can identify real-life problems. Similarly, music therapy interventions can be used to help incarcerated individuals identify current problems and work through problem solving steps (problem orientation,

problem definition, goal setting, generating alternatives, decision-making, action, and evaluation), with plan execution occurring between sessions (Ross & Hoaken, 2010).

For individuals with executive function deficits, opportunities to practice new skills should be made available (Ross & Hoaken, 2010). Music therapy provides multiple opportunities to learn and practice new skills, both musical and non-musical. Music therapy can encourage self-monitoring and self-evaluation, particularly in the context of a group setting (Thaut, 1987). Regular goal setting, both musical and non-musical, can occur in the context of music therapy and can encourage offenders to practice new skill sets during and in between sessions.

Song discussion and lyric analysis, particularly using culturally relevant music, is a popular music therapy technique that is widely used in the correctional setting to facilitate discussion of important topics, encourage problem-solving within a group-framework, and improve coping skills (Dickinson, Odell-Miller, & Adlam, 2013; Gardstrom & Hiller, 2010; Kobil & Tyson, 2006; Silverman, 2011). Dunphy (1999) describes a creative arts performance-based program for incarcerated women.

Drumming and improvisation has been used in the correctional setting, both in and out of the context of music therapy, to facilitate intimacy, social skills, prosocial behavior, and awareness and expression of emotions, all of which relate to areas of need to reduce risk of recidivism (Bacon, 2011; Watson, 2002).

Thaut et al., (2009) examined the effects of neurologic music therapy (NMT) on the cognitive functioning and emotional adjustment of individuals with brain-injury. Participants engaged in four 30 minute NMT sessions, each occurring on a different day, that focused on one aspect of rehabilitation, including executive function, attention,

memory, and emotional regulation. Participants were given a pre- and post-test before and after each session. Control participants were given a pre-test, engaged in 30 minutes of rest, and then administered a post-test. Executive function interventions used group improvisation to focus on decision-making, problem solving, comprehension and reasoning. For emotional adjustment, the music therapist presented songs representing strong positive emotions, which were performed by the group. Attention control exercises were achieved by using musical exercises involving rhythmic synchronization in which participants matched rhythms produced by other group members and the music therapist. Memory training exercises were achieved by using chants and songs utilizing music as a mnemonic device. Results indicated NMT significantly improved executive function and emotional adjustment during the rehabilitation period. Participants also experienced a lessening of depression, anxiety, and sensation seeking following NMT. These findings provide preliminary evidence that music therapy can provide improvement in aspects of executive functioning and emotional adjustment (Thaut, et al., 2009).

The correctional institution is a highly dynamic and challenging setting in great need of best practice treatment that targets functional skills using a creative modality to encourage responsivity and retention. Music therapy is a highly motivational and engaging treatment option that can be used with incarcerated offenders to improve executive function skills, such as impulse control, planning/organizing, problem-solving, monitoring of one's own behavior, and emotional regulation.

Restatement of Purpose

To date, there is no research within the field of music therapy that reviews the use of music interventions specifically designed to improve executive function skills in incarcerated adults. The purpose of the present study was to examine the effect of participation in a music therapy group on the executive function skills of male, incarcerated adults in a county correctional facility.

Research Questions

1. Among male, incarcerated adults, does participation in *either* the music therapy or talk-based group significantly improve executive function scores by the conclusion of four treatment sessions?
2. Among male, incarcerated adults, does participation in a music therapy group significantly improve executive function and yield a higher group retention rate than participation in a talk-based therapy group by the conclusion of four treatment sessions?

CHAPTER 3

Methodology

Participants

Sixteen ($N=16$) male adults, ages eighteen and older, serving sentences in a correctional facility in a medium sized Midwestern city, were initially recruited with the assistance of a correctional staff member from the medium-security men's pod. Participants were randomly assigned to the experimental group ($n=8$) or the control group ($n=8$). Participation in the study was contingent upon the following criteria: 1) currently serving a sentence at least 4 weeks in length (the initial duration of the study), 2) housed in the medium-security pod in the jail at start of study (security level could change at any time without researcher's knowledge), 3) willingness and ability to participate in entire study, including completion of BRIEF-A Assessment before and after treatment interventions. Facility policies mandated that participants needed to exhibit appropriate behavior in the correctional facility in order to participate in the study each week.

Due to unpreventable participant security-level changes within the correctional facility, prison transports, and discontinuing the study by choice, the total number of participants who completed the entire study was twelve inmates ($N=12$), with seven participants in music therapy ($n=7$) and five participants in the talk-based group ($n=5$). Furthermore, because of difficulties with scheduling within the jail, the initial duration of the study, four weeks, was condensed to two weeks, with each group meeting four times.

Setting

The correctional facility is a primary resource for the criminal justice system and is used for detention purposes at various stages in the criminal justice process (Arungwa

& Osho, 2012). The jail in which this study was conducted is a 192-bed Direct Supervision facility designed to hold individuals awaiting trial for any crime, misdemeanor or felony and those convicted of a misdemeanor, a crime punishable by incarceration for one year or less. However, the facility also holds a number of adults convicted of a felony while he or she is awaiting prison transport and/or has been temporarily returned from prison to stand trial on an additional charge or attend an appeal hearing.

This correctional facility is dedicated to providing intervention, programming, and services to detained individuals to help with successful reintegration into society. Incarcerated males and females are housed in the facility, with only the female unit using “double bunking” to avoid potential inmate on inmate assault and reduce the spread of communicable diseases. Incarcerated men and women are housed according to security level, which is dependent upon reason for detainment and inmate behavior. Currently, the jail contains the following pods: minimum-security, medium-security, maximum-security and special management men, and a women’s pod housing all security levels. Special management houses offenders with sex-related cases. The medium-security pod, from which participants were recruited, houses individuals with problematic behavior that prevents them from moving to the minimum-security pod. Incarcerated males in this security pod have a semi-restricted schedule.

Music therapy sessions were held in the facility’s “Inmate Library,” which is located outside of the inmate pods and offers privacy for discussion and contains session sounds well enough that they do not distract other inmates, correctional staff, and visitors. A correctional staff member escorted participants from the medium-security pod to the

Inmate Library. Participants were seated in chairs provided by the facility in a semi-circle. The researcher faced the participants and the door, and a correctional staff member was present at all times. All materials, including instruments for the experimental group, were outside of the circle to ensure researcher and participant safety in case of unexpected behavioral problems. A white board, also provided by the facility, was directly outside of circle to the right of researcher. All furniture and props provided by the facility were returned to its original place following each session.

Because of time and space constraints within the jail, talk-based sessions were held in a group meeting room within the medium-security men's pod. Participants were seated around a table, with the researcher seated closest to the door for security reasons. A white board was provided by the facility. All furniture and props provided by the facility were returned to its original place following each session.

Consent

All participation was voluntary. Inmates who chose to participate in the study were rewarded by the correctional facility with an out-of-cell DVD viewing event within the jail at the conclusion of the study as well as a mini concert provided by the researcher. These rewards were suggested and approved by the correctional facility. Participants were informed that participation would not impact the conditions of their confinement. Inmates who chose to participate would not receive improved living or work conditions or an improved likelihood of early release. Participants were over the age of eighteen and were briefed on the study as well as signed consent forms before participating in any sessions. The consent form contained a brief overview of the treatment protocol, explained potential risks, and guaranteed the confidentiality of all personal information

obtained from the participants (see Appendix A for consent forms). The researcher worked with the facility's Program Director to present the research study to incarcerated men in the medium-security pod one week prior to the beginning of study. Permission to run the research study in the correctional facility was approved by the Sheriff's Office. The researcher obtained permission from the Human Subjects Committee-Lawrence Campus (HSC-L) before executing the research study.

Materials

Intake information. Upon consenting to participate in the study, each participant completed an Intake Questionnaire (see Appendix B for Data Collection Tools). This questionnaire asked participant age, race, level of education, length of sentence, the number of times the participant had been incarcerated, and if he had previously attended any treatment programs offered by the correctional facility. Each participant was assigned an identifying number to ensure no personal information would be linked with his name following completion of study.

Assessment tools. The Behavior Rating Inventory of Executive Functions for Adults (BRIEF-A) was administered pre- and post- treatment to both experimental and control groups. The BRIEF-A is a questionnaire completed by adults ages 18-90 years old and is designed to capture an individual's view of his own strengths and weaknesses in executive functioning (EF) in the past month. The BRIEF-A assessed nine aspects of EF subsumed under two broad domains reflecting the ability to maintain appropriate control over one's thoughts, behaviors and emotions (behavioral regulation) and the ability to manage one's attention and problem solving (metacognition). Individual aspects evaluated included: 1) selecting appropriate goals for a particular task, 2)

planning and organizing an approach to problem solving, 3) inhibiting distractions and keeping oneself from acting impulsively or acting inappropriately in one's environment, 4) holding information such as goals and plans in mind over time, 5) flexibly altering one's behavior and/or problem-solving strategy when necessary, and 6) monitoring one's own behavior for mistakes as well as for its effect on others. Executive functions are also responsible for regulating emotional responses, allowing for better problem solving and more successful interpersonal relationships. The BRIEF-A includes three validity scales: Negativity, Infrequency, and Inconsistency. BRIEF-A contains 75 items and took approximately 15 minutes to administer (Roth, Isquith, & Gioia, 2005).

Retention rates. The Attendance Data sheet was used to track attendance in both experimental and control groups and was used for comparison of retention rates at conclusion of study (see Appendix B for Data Collection Tools). A qualitative Out-take Questionnaire was administered at the end of study to each participant and assessed participant reaction to the study as well as participant perceived new skills (see Appendix B for Data Collection Tools.)

Selected songs. The following songs were used to facilitate group music-making and lyric analysis in the experimental group over the course of treatment: "Airplanes" by B.o.B. featuring Hayley Williams (2010), "Lose Yourself" by Eminem (2002), "Not Afraid" by Eminem (2010), "The Show Goes On" by Lupe Fiasco (2010), "Till I Get There" by Lupe Fiasco (2011), "Far From Over" by Rev Theory (2009), "Losing My Way" by Justin Timberlake (2006), "The Red" by Chevelle (2002), "Mirror" by Lil Wayne (2011), "New Low" by Middle Class Rut (2008), and "Walk" by Foo Fighters (2011). Music was carefully selected by the researcher using prior knowledge collected

during previous music therapy assessment sessions with incarcerated males and reflects themes relevant to improving executive functions.

Lyric sheets, clipboards, and pencils were provided to participants in the experimental group. Blank paper, clipboards, and pencils were provided to participants in the control group. All writing utensils were provided by the correctional facility, as these must be carefully monitored and adapted for safety reasons. A white board with dry-erase markers was available for each group to write down session themes and ideas. The control group utilized typed prompts to generate group discussion that paralleled themes in the experimental group.

Musical instruments. The following musical instruments were used in the experimental group over the course of treatment: 1987 Takamine G330 acoustic guitar with steel strings was used to accompany singing (Takamine Guitars, 2010), 2 Remo African collection key-tuned djembes (10" and 12") (West Music, 2013), 8 Remo paddle drums (8", 10", 12" and 14") with 16 soft mallets (West Music, 2013), 1 Tycoon TB-8 B N 7" natural finish bongos (West Music, 2013), 1 xylophone with 2 hard mallets, 1 Basic Beat BB07L standard cabasa (West Music, 2013), 1 West Music WM4330 medium wood maraca (West Music, 2013), 1 Yamaha 61-key electric keyboard and stand (West Music, 2013), 1 Remo fiberskyn 3 pre-tuned double row tambourine (West Music, 2013), 3 Remo fiberskyn 3 HD-8500-06 pre-tuned frame drums (West Music, 2013), and 1 Latin Percussion World Beat WB2040 Caribe Conga (West Music, 2013). Instruments were carefully selected by researcher using prior knowledge collected during previous music therapy assessment sessions with incarcerated males and were used in interventions intended to improve executive function skills.

Design

The researcher lead both the experimental and control groups during the two-week treatment period. The researcher completed a background check, volunteer training orientation, and signed forms required by the correctional facility which protect the confidentiality of each inmate and protect the volunteer and inmates from conflict-of-interest situations.

A pretest-posttest control group experimental design was used in this study. The primary researcher randomly assigned volunteer participants to one of two groups: 8 participants in music therapy, and 8 participants in the talk-based group. The investigator, a music therapy graduate student with seven years of professional music, music therapy, and counseling skills training and experience, facilitated four one-hour sessions over the course of two weeks for both the experimental and control groups. Efforts were made to avoid overlap with facility visitation times and other scheduled groups. Participants who had scheduled or unscheduled legal proceedings over the course of treatment that conflicted with group meeting times was noted on the Attendance Data Sheet and was differentiated from other absences resulting from behavioral problems or disinterest.

Procedure

Following the study recruitment process (including obtaining consent forms from all participants), the researcher randomly assigned each participant to the music therapy treatment group or talk-based control group. BRIEF-A was administered before treatment and after treatment in both the experimental and control groups. Administration of the assessment was conducted on-site in a Group Meeting Room. The independent variable was participation in music therapy or talk-based sessions. The

dependent variable was executive function skills as measured by the BRIEF-A. It was hypothesized that participation in group music therapy would improve executive function skills in medium-security, incarcerated, male adults as measured by the Behavioral Rating Inventory of Executive Functions assessment.

The treatment period was two weeks, with each group meeting for a total of four hours. The experimental group received music therapy treatment, and the control group participated in talk-based interventions, primarily rooted in cognitive-behavioral theories. Each session focused on a specific theme/aspect of executive functioning.

Experimental group intervention. Participants in the experimental group engaged in a total of four hours of music therapy over the course of two weeks, led by the researcher. Eight participants ($n=8$) were randomly assigned to the treatment group prior to beginning of study. Music therapy was held each time in the Inmate Library, to allow for control. Music therapy included content intended to improve EF skills using various music therapy interventions, primarily improvisation, lyric analysis, and rhythmic interventions (see Appendix C for intervention procedures).

At the start of each group, attendance was taken. Participants were asked to select an instrument for the opening intervention, and researcher used piano or guitar to provide a live music presentation of opening song. Participants were asked to participate in group-music making through both structured and unstructured progressions, as well as answer a specific question relating to the opening songs, which was written on the white board. The opening song was followed by the presentation of a second live song selected by the researcher and based on population music preferences. Each song related to the aspect of executive function being targeted each session, including problem solving,

managing aggression and impulsivity, selecting appropriate goals, managing one's attention and behavior, and emotional control. Other aspects of executive function, including decision-making and stress management, were a natural part of the group. Each participant was given a copy of the lyrics, a clipboard, and a pencil for making note of any thoughts and/or reactions they had to the song. Participants were allowed to play or sing along, if desired. The researcher facilitated a discussion following the song presentation, verbally prompting when necessary. Following the discussion, each participant had the opportunity to set a short-term goal. These goals were shared during the closing music improvisation, during which each participant selected another instrument for group participation.

Control group intervention. Participants in the control group engaged in a total of four hours of talk-based interventions over the course of two weeks, led by the researcher. Eight participants ($n=8$) were randomly assigned to the control group prior to beginning of study. The talk-based group was held in the Group Meeting Room each time, to allow for control. Content was identical to the music therapy group but utilized verbal techniques in place of music therapy techniques, primarily verbal discussions using prompts and writing (see Appendix C for intervention procedures).

The control sessions closely followed the format of the experimental sessions but did not include music interventions. Themes were consistent from session to session between the two groups. At the start of the control group, attendance was taken. Each participant was provided a blank piece of paper and a writing utensil and was asked to respond to the weekly introductory question/task, which was written on the white board. Participants shared these writings with the group.

Following the introductory application, participants were given a typed prompt relating to the daily discussion, which mirrored the aspect of executive function addressed in the experimental session that day. The researcher facilitated this discussion, verbally prompting when necessary. Following the discussion, each participant had opportunity to set a short-term goal. These goals were shared during the group closer.

Figure 3 illustrates the overall treatment format.

Session 1-MT 1. Attendance 2. Group Opener/Introductions “Airplanes,” live performance & group music-making, “Wish For” statements 3. Orientation to EFs 4. Set weekly goals 5. Problem Solving Training (shifting), “Losing My Way” Live Performance & Lyric Analysis 6. Set weekly goal. 7. Group Closing Music Improvisation.	Session 1-Control 1. Attendance 2. Group Opener/Introductions, “Wish For” statements 3. Orientation to EFs 4. Set weekly goal. 5. Problem Solving Training (shifting) using typed prompts 6. Set weekly goal. 7. Group Closing-sharing of goal	Session 2-MT 1. Attendance 2. Group Opener “Lose Yourself,” live performance & group music-making, “Dream big” statements 3. Goals-recall and discuss 4. Managing Aggression & Reducing Impulsivity through Emotional Identification/Control (inhibit/stress manage), “The Red” Live Performance & Lyric Analysis 5. Set weekly goals. 6. Group Closing-Improvisation.	Session 2-Control 1. Attendance 2. Group Opener “Dream big” statements 3. Goals-recall and discuss 4. Managing Aggression & Reducing Impulsivity through Emotional Identification/Control (inhibit/stress manage) using typed prompts 5. Set weekly goals. 6. Group Closing-sharing of goal
Session 3-MT 1. Attendance 2. Group Opener “The Show Goes On,” live performance & group music-making, “persevering through adversity” statements 3. Goals-recall and discuss 4. Re-examining Coping Strategies/Relaxation Techniques “New Low,” Live performance and lyric analysis, Music & Relaxation Technique 5. Set weekly goals. 7. Group Closing Improvisation.	Session 3-Control 1. Attendance 2. Group Opener, “persevering through adversity” statements 3. Goals-recall and discuss 4. Re-examining Coping Strategies/Relaxation Techniques , using typed prompts and Mindfulness Training 5. Set weekly goals. 7. Group Closer-sharing of goal.	Session 4-MT 1. Attendance 2. Group Opener “Far From Over,” live performance & group music-making, “not giving up” statements 3. Developing short-term and long term direction , “Walk” Live performance and lyric analysis 4. Group Closing Improvisation. 5. Termination.	Session 4-Control 1. Attendance 2. Group Opener, “not giving up statements” 3. Developing short-term and long-term Direction , using typed prompts 4. Group Closer-sharing long-term goals 5. Termination.

Figure 3. Treatment outline.

Data Analysis

Data were collected throughout the study using the Behavioral Rating Inventory of Executive Functions for Adults, a participant attendance data sheet, an Intake Questionnaire and a qualitative Out-take Questionnaire. Data from the BRIEF-A (pre- and post-tests) was collected and imported into SPSS. Raw scores for all nine subscales (Inhibit, Shift, Emotional Control, Self-Monitor, Initiate, Working Memory, Plan/Organize, Task Monitor, Organization of Materials) as well as the 2 summary index scales (Behavioral Regulation Index [BRI], and Metacognition Index [MI]) and the Global Executive Composite (GEC-overarching summary score that incorporates all of the BRIEF-A clinical scales) for each participant were transformed into *t* scores using normative conversion tables provided in the BRIEF-A Professional Manual. *T* scores are based on comparison to the normative sample comprised of 1050 self- and 1200 informant reports, with higher scores reflecting greater difficulties experienced by the individual (Roth, Isquith, & Gioia, 2005). Each participant ended up with a BRI score, MI score, and an overall Global Executive Composite (GEC) score, a summary score that incorporates all of the clinical scales of the BRIEF-A. An analysis of covariance (ANCOVA) was run to determine the effect of two different treatment interventions on post-intervention GEC executive function scores after controlling for pre-intervention executive function scores. The significance level was set at $p < .05$

CHAPTER IV

Results

Demographics

A total of sixteen male participants ($N=16$) consented to participate in the study over the course of the treatment period. However, due to participant security-level changes within the correctional facility, prison transports, and discontinuation of the study by choice, the total number of participants who completed the entire study was twelve inmates ($N=12$), with seven participants in music therapy ($n=7$) and five participants in the talk-based group ($n=5$).

Participants completed an Intake Questionnaire (see Appendix B) prior to onset of sessions. Demographic information to describe the sample was only included if the participant completed the entire study. The mean participant age for the experimental group was 41.43 years and 42.60 years for the control group. In the experimental group, three participants had completed their GED, three participants had completed some college, and one participant completed college. In the control group, two participants completed their GED, one participant received his high school diploma, one participant completed some college, and one participant completed college. In the sample, one participant described his race as Hispanic, eight participants identified Caucasian, two participants selected Black, and one participant identified more than one race.

The mean sentence lengths were 31.4 months for the experimental group and 14 months for the control group; however, five of the inmates in the sample were still waiting to be given a sentence length, so that information could not be considered in the overall sample. In the experimental group, the mean number of times the participants had

been incarcerated was 4.6, with one participant stating “multiple jail incarcerations and one 10-year prison term,” and another writing “far too many, since age 16,” neither of which were quantifiable. In the control group, the mean number of times the participants had been incarcerated was 15.8.

When asked if they had previously attended any treatments/programs provided by the correctional facility, the participants listed the following groups: Writing, Narcotics Anonymous, Alcoholics Anonymous, Church, Stinkin’ Thinkin’, Anger Management, Bible Study, Life Skills, Job Readiness, Library, DADS (a group intended to improve parental skills while incarcerated), and Art Therapy. Four participants had previously attended a Music Therapy group with a different therapist other than the researcher. One participant in the experimental group and two participants in the control group reported they had not previously attended any treatment in the jail. Overall, participants randomly placed into the control group had less previous experiences with programs/treatment provided by the correctional facility.

Quantitative Data

An Analysis of Covariance (ANCOVA) was run to determine the effect of two different treatment interventions on post-intervention summary index scores, the behavioral regulation index (BRI) and the metacognition index (MI), as well as the global executive composite scores (GEC), after controlling for pre-intervention executive function scores. An alpha level of .05 was used for all statistical tests. The global executive composite (GEC) scores were most closely examined, as the GEC is a summary score that incorporates all of the clinical scales of the BRIEF-A.

There was a linear relationship between pre- and post- intervention executive

function scores for each intervention type, as assessed by visual inspection of a scatterplot. There was homogeneity of regression slopes, as the interaction terms were not statistically significant, $F(1,8) = .696, p=.428$. Standardized residuals for the interventions and for the overall model were normally distributed, as assessed by Shapiro-Wilk's test ($p>.05$). Executive function scores were normally distributed for both groups, as assessed by visual inspection of Normal Q-Q Plots. There was homoscedasticity and homogeneity of variances, as assessed by visual inspection of a scatterplot and Levene's Test of Homogeneity of Variance ($p=.679$), respectively. There were no outliers in the data, as assessed by no cases with standardized residuals greater than ± 3 standard deviations. After adjustment for pre-intervention executive function scores, there was not a statistically significant difference in post-intervention GEC scores between the interventions, $F(1,9) = .017, p=.900$, partial $\eta^2=.002$. Further analysis confirmed there were also no statistically significant differences in post-intervention BRI or MI subscales between the interventions, $F(1,9) = .011, p=.918$, partial $\eta^2=.001$ and $F(1,9) = .003, p=.954$, partial $\eta^2=.000$, respectively (also see Table 1). Figure 4 shows a more detailed graph of individual's raw GEC scores pre- and post-intervention. A decrease in score from pre- to post-intervention reflects an improvement in executive functioning.

Table 1

Adjusted and Unadjusted Intervention Means and Variability for Post-Intervention Executive Function Scores with Pre-Intervention Executive Function Scores as a Covariate

Global executive composite scores (GEC)					
Intervention	N	<u>Unadjusted</u>		<u>Adjusted</u>	
		M	SD	M	SE
Music Therapy	7	56.29	15.703	50.630	3.127
Talk-Based	5	43.40	9.990	51.318	3.804

Metacognition index scores (MI)					
		53.29	13.659	48.814	2.499
Music Therapy		53.29	13.659	48.814	2.499
Talk-Based		42.80	9.680	49.060	3.020

Behavioral regulation index scores (BRI)					
		59.14	15.952	53.634	3.966
Music Therapy		59.14	15.952	53.634	3.966
Talk-Based		42.20	8.585	52.912	4.854

Note. Lower scores reflect less executive dysfunction, or better executive functioning

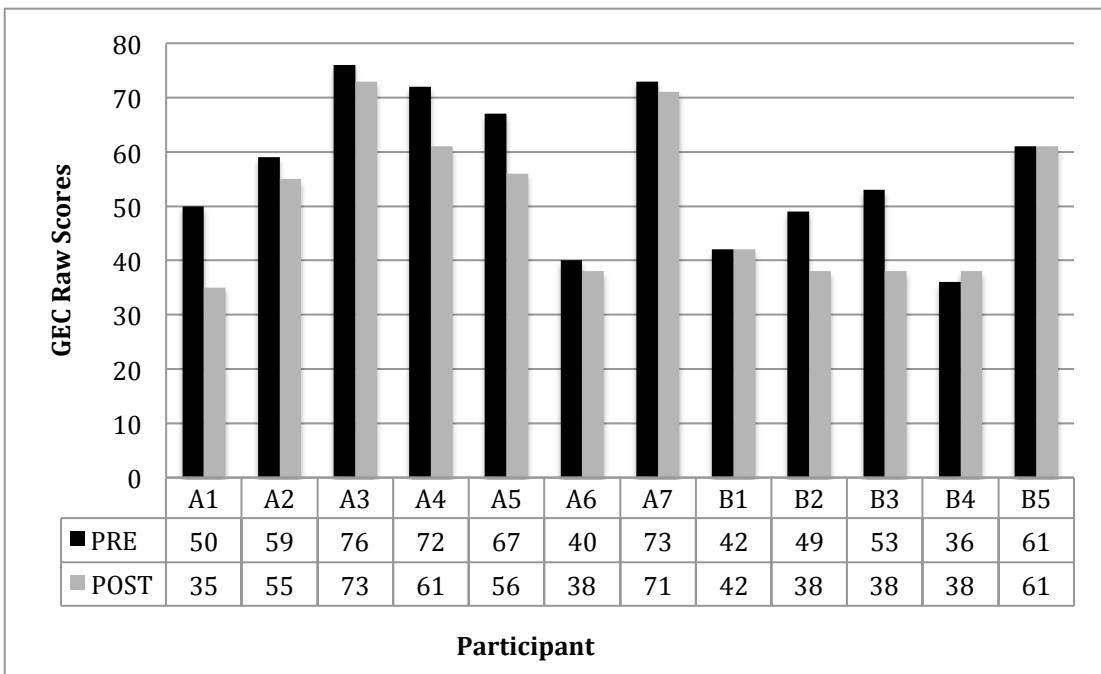


Figure 4. Pre- to post- GEC raw scores for music therapy participants (A) and talk-based participants (B).

Attendance was tracked over the course of the sessions. Absences due to court-mandated appearances, security level changes or prison transfers were differentiated from absences due to lack of interest or behavioral consequences. Figure 5 shows the attendance rates of both groups over the treatment period. The music therapy group yielded a higher group retention rate than the talk-based group over the treatment period. In the experimental group, one inmate was transferred to prison after attending three sessions. In the control group, one inmate was released from jail early after attending one session, one inmate was transferred to a lower security level after attending three sessions, and one inmate declined to participate after attending two sessions. When tracking attendance, refusal to continue attending sessions was differentiated from inability to continue attending sessions.

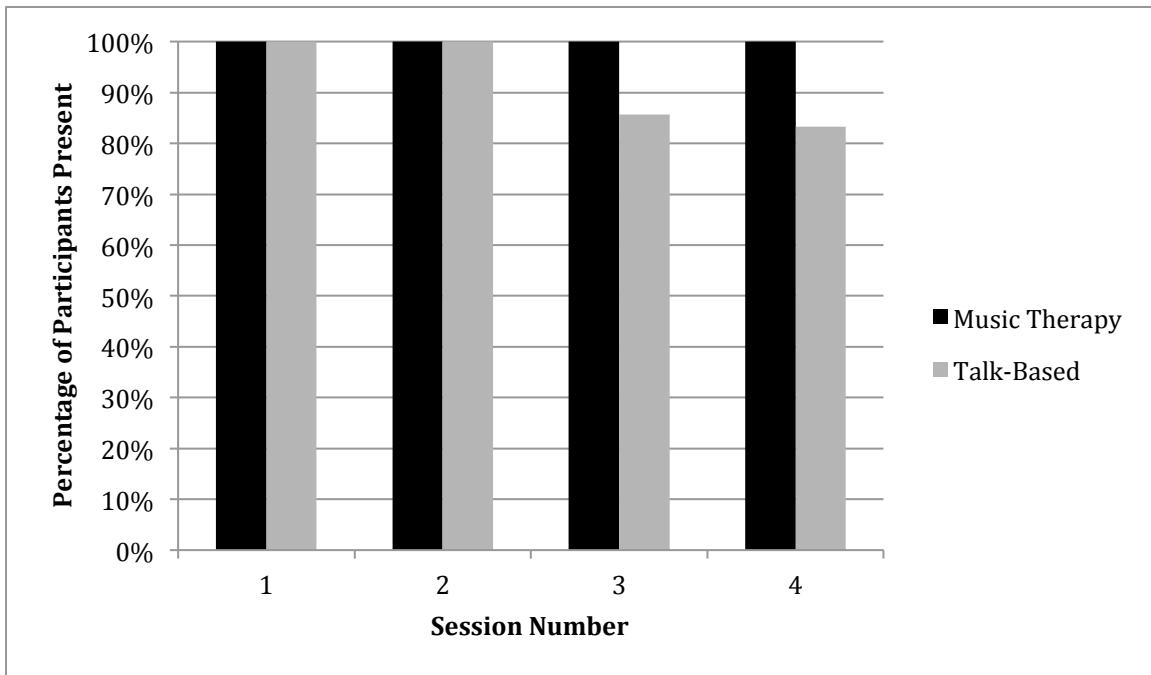


Figure 5. Comparison of music therapy and talk-based group attendance rates.

Qualitative Data

All participants who were present for the entire study completed the Qualitative Out-take Questionnaire (see Appendix C), providing general reactions, skills learned, favorite experiences, and opinions on future participation in either the music therapy or talk-based group. When asked to describe general reactions to being a part of the research study, all participants from both groups responded positively, but the content was varied. In the music therapy group, response themes included feelings of enjoyment, appreciation for being helped and helping others, and feeling joy and relaxation through the musical process. Select responses included, “glad to help in a study that could help people in any way...including myself,” and “I loved it because I love music. Being in the group gave me a chance to hear music and remember when life was good.” In the talk-based group, response themes included appreciation for being helped and helping others, acquiring new cognitive skills, and gratefulness. Select responses included, “It was nice

to hear different ways to deal with anger and other situations and hear how others have dealt with it positively or other wise,” and “I felt it was helpful in opening my mind more broadly when changing my thinking. I’m open in helping myself to later help others.”

When asked to list any new skills acquired during the treatment period, both groups wrote about common themes, including coping skills (relaxation/meditation, asking for help), dealing with anger and stress, goal-setting, and emotional identification and regulation. In addition to the before mentioned themes, the music therapy group also reported acquiring specific music skills. Select responses from the music therapy group included: “I have learned there are other ways than just acting out to deal with my anger. I have learned that I am a very tense person but music helps to relax and calm me down,” “I learned not to be scared of what I feel,” and “I liked the experience of playing the xylophone and learned to get some essential coping skills and how to set short and long term goals.” Select responses from the talk-based group included: “setting aside my pride to ask for help and using new ways to cope with my emotions, listing my obstacles and goals and not setting my expectations so that I fail,” “learned to think about my actions and how they affect others (family and loved ones) and more on how to cope and deal with anger,” and “I learned about triggers and cues, how to cope with stress and anger.”

When prompted to describe their favorite part(s) of this experience, the responses for both groups were positive but varied. Themes present in the music therapy group’s reactions included appreciation for making music together, feeling relaxed and decreasing stress, appreciation for the therapist and her live music presentations (voice and guitar), and the opportunity to listen to others’ perspectives. Select responses

included, “the hands on experience, playing with others, and the music itself was very relaxing; I anticipated each class,” and “jam session portion of the class. I’ve never found me being musically inclined other than singing and turned out to be pretty good at percussion and it was an escape.” Themes from the talk-based group focused on acquiring new cognitive skills and listening to others’ perspectives. Select responses included: “Having others with similar experiences and being able to have in-depth conversations that weren’t completely one-sided,” “learning, hearing new ideas on how to deal with things on the outside,” and “being able to find out and think about maybe how I should deal with situations, good or bad, in the future.”

All participants responded that they would participate in music therapy/verbal therapy groups again and 100% of respondents reported feelings of gratefulness. Select responses from the music therapy group included: “Every time it’s available! I thoroughly enjoyed it, every aspect. Thank you,” “I would definitely participate because it helped me see and bring back to life a part of me that was hiding/lost. It helped me relax and ease my mind off things, thank you” “Yes, music calms the soul and helps ease stress away, thank you!” and “Yes, music therapy is very therapeutic! Listening and improvisation, playing as a group was my favorite. Thank you!” Select responses from the talk-based group included: “Yes, anything that can make you look at situations positively when in the past you did not is worth doing again, thank you,” “Yes, it’s nice to find some ways to help get through life when having problems, thank you,” “Yes, I think it would benefit people in so many different ways. Anger, thinking, coping skills, or just about themselves and their family. Thanks,” and “Yes, I would, because it is very insightful and learned a lot about me, so thanks.”

CHAPTER V

Discussion

The purpose of this study was to examine the effect of participation in a music therapy group on the executive function skills of male, incarcerated adults in a county correctional facility. Quantitative and qualitative assessments were used to identify differences between the effects of music therapy interventions and non-music, talk-based interventions on the outcome measure.

Statistical Interpretation

Based on the quantitative measures used, neither experimental nor control group interventions resulted in statistically significant improvement in GEC, MI, or BRI scores over the treatment period. Despite this lack of statistical significance, pre- to post-intervention executive function raw scores improved for 100% (7/7) of the participants in music therapy and for 40% (2/5) of participants in the talk-based group, suggesting participation in music therapy improved executive functioning more than participation in the talk-based group (refer to Figure 4).

Furthermore, the qualitative data collected as well as purely informal researcher/correctional staff observations suggested that both intervention groups were viewed by participants and staff as beneficial, positive, and cognitively enhancing. Qualitative responses from both groups suggest that participants in music therapy acquired the same skills (enhanced problem solving, emotional identification/regulation, goal setting, monitoring of one's own behavior in relation to others, anger management/impulse control, and coping) as the talk-based group *in addition to* the acquisition of new music skills or reawakening of previous music skills, resulting in

reported feelings of improved self-worth and decreased depression. This is consistent with clinical data collected in the jail previous to this research study (Ellis, 2012).

Furthermore, participants in the music therapy group reported themes of relaxation and stress reduction as a natural part of the music therapy process, all of which research has linked to reduced depression, reduced suicidal ideation, and improved preparedness for behavioral change within the incarcerated population (Antiss, 2003; Dickinson, Odell-Miller & Adlam, 2013; Thaut, 1987).

Examination of session attendance showed higher retention rates for the music therapy group than the talk-based group, suggesting that music therapy might be intrinsically more rewarding and therefore more appealing than talk-based groups. Informal discussion with correctional staff throughout the study indicated that inmates in the music therapy group were overall more prepared and eager to attend group each week than inmates in the talk-based group.

Incarcerated individuals have a right to attend scheduled, monitored times referred to as “visitations” to meet with their friends and family. Over the course of treatment, two participants in music therapy reported to the researcher that they had elected to forego their visitation times in order to attend music therapy. Conversely, over the course of treatment, two inmates in the talk-based group arrived late because they chose to schedule a visitation that conflicted with the group meeting time.

Other notable, informal observations collected by the researcher and Program Director within the correctional facility are that participants in music therapy arrived to group with a sense of urgency, sitting down quickly and waiting for the researcher quietly. In the talk-based group, it often took time to quiet the participants so that the session

could be started. Also, participants in music therapy used the musical process to quickly create a sense of group cohesion, resulting in less off-task behaviors, very minimal incidents of interrupting others, and an observable respect for the opinions and thoughts of others within the group. In the talk-based group, the researcher had to redirect off-task behaviors many times each session, including encouraging the participants not to talk over one another and to respect one another's opinions.

Finally, feedback from correctional staff members indicated that group cohesion, including peer respect and a general sense of improved well-being, was evident for inmates who returned from the music therapy sessions, and this was not the case for the talk-based group. This suggests that music therapy has the potential to have longer lasting positive effects on incarcerated individuals.

Limitations

The biggest limitations to the present study were the small sample size and the length of treatment period. Due to correctional facility rules, only eight inmates could participate in each group, resulting in a total of sixteen ($N=16$) participants. Then, due to movement within the facility, prison transports, and inmates declining to participate, the total number of participants dropped to twelve ($N=12$). In the jail setting, it is impossible to know how many participants will be available for the entire study. It may be more feasible in the prison setting to depend on participants to be present for the entire study, as their sentence length is generally longer and has already been determined; however, in the jail setting, this is not the case. With only twelve participants, it is difficult to generalize any notable findings to the incarcerated male adult population as a whole. Also, there were not enough inmates who met all criteria for the study to include a group who

did not receive any treatment. Again, this may be more feasible in the prison setting but is difficult in the jail.

Due to the nature of the criminal justice system, the researcher had to adapt the parameters of the study several times to respond to questions from the Sheriff's Office. Because of this, the initial treatment period of six weeks had to be condensed to four weeks and then again to two weeks. In order to complete the study, the researcher had to adapt the treatment period to include only four sessions for each group. It is difficult to dismiss the idea that a longer treatment period with access to more sessions might have resulted in significantly improved executive function scores, particularly for the music therapy group.

Suggestions for Future Research

Although quantitative analysis did not result in statistically significant improvement in executive function scores for either the experimental or the control group, qualitative results, researcher and correctional staff observation, as well as visual inspection of raw data suggest that both groups had positive reactions to the treatment, with the music therapy group reporting consistently improved executive function raw scores from pre- to post-intervention. These results and behavioral observations warrant further investigation into the efficacy of music therapy treatment with the incarcerated population.

Future research should attempt to increase the length of the treatment period, including more sessions for each group. The length of time to receive approval to conduct research in a correctional facility is often lengthy, so it is advisable to allow sufficient time for this process. While the incarcerated population does not lend itself

easily to the consistency needed to conduct research, all efforts should be made to increase the sample size, including an additional non-treatment control group using the same outcome measures. Also, it is recommended to consider using additional executive function assessment tools in addition to the BRIEF-A, to give a more multi-faceted view of the individual's executive functioning.

While the findings from this study were not statistically significant and therefore cannot be broadly applied to the incarcerated population, it does reinforce the benefits of and need for evidence-based treatment within the correctional facility. All of the participants in the music therapy group (7/7) had improved executive function scores from pre- to post-intervention, while only 2/5 participants in the talk-based group reported improved scores. While both groups verbally indicated cognitive skills enhancement, improved emotional regulation, and a general positive reaction to treatment, participants in the music therapy group were more engaged and cohesive, anticipated the sessions more, and reported decreased feelings of depression and improved relaxation, suggesting that music therapy can achieve the same results more quickly, encourage treatment compliance, and better prepare inmates for behavioral modification. Due to the overall positive response to this study as well as the current lack of research on music therapy in correctional institutions, it is concluded that further research with this population is both needed and encouraged.

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APPENDICES

APPENDIX A
CONSENT FORM

The University of Kansas

School of Music
Division of Music Education and Music Therapy

ADULT INFORMED CONSENT STATEMENT

The Effect of Music Therapy on Executive Function Skills in Male, Incarcerated Adults in a Correctional Facility

INTRODUCTION

The Department of Music Education and Music Therapy at the University of Kansas supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You may refuse to sign this form and not participate in this study. You should be aware that even if you agree to participate, you are free to withdraw at any time. If you do withdraw from this study, it will not affect your relationship with this unit, the services it may provide to you, or the University of Kansas.

PURPOSE OF THE STUDY

The purpose of the present study is to examine the effect of participation in a music therapy group on the executive function skills of maximum-security, male, incarcerated adults in a county correctional facility. Music therapy techniques, including group music-making, music listening, lyric analysis, and music improvisation, will be compared with more talk-based interventions to see which sessions yield greater improvement in executive function skills, more consistent participant attendance, and more self-reports of new acquired skills.

PROCEDURES

You will be asked to attend as many sessions as you are willing and able to be a part of over the course of the treatment period. Sessions will be held twice a week for 2 weeks and will last approximately 60 minutes. Upon consenting to participate in study, you will be randomly assigned to either a music therapy group or a talk-based group. The music therapy session will involve listening to music, sharing reactions to songs through lyric analysis, and playing instruments. The talk-based group will involve responding to questions through writing and verbal discussions.

Before and after the treatment period, you will be asked to complete the Behavior Rating Inventory of Executive Functions for Adults (BRIEF-A). The BRIEF-A contains 75 questions and takes about 10-15 minutes to complete. On the first day of the study, you will be asked to fill out an Intake Questionnaire. Following the final sessions of treatment, you will be asked to complete a short-answer survey that asks about your

overall reactions to this experience, what you learned, what you liked, and what you disliked. At the conclusion of the treatment period, you will be asked to complete the BRIEF-A one final time.

RISKS

There are no foreseen health or physical risks resulting from participation in this study.

BENEFITS

There are many potential benefits to participating in this study. You will have the opportunity to explore various musical instruments in a safe, group setting. You will be able to enjoy a personal musical experience, interact with your peers, express your experiences, reactions and feelings freely in a safe and creative environment, and learn about yourself and others. Your input will be taken seriously, will be confidential, and will be helpful in facilitating group discussions.

PAYMENT TO PARTICIPANTS

Participants will not be paid for their involvement in this study. A decision to participate or to decline will not affect the conditions of your confinement, including improved living or work conditions or an improved likelihood of release. If you decide to participate in this two-week study, you will be rewarded by the Douglas County Correctional Facility with an on-site DVD viewing opportunity at the conclusion of the study.

PARTICIPANT CONFIDENTIALITY

Your name will not be associated in any publication or presentation with the information collected about you or with the research findings from this study. Instead, you will be assigned a number that will be used for all data collection.

REFUSAL TO SIGN CONSENT AND AUTHORIZATION

You are not required to sign this Consent and Authorization form and you may refuse to do so without affecting your right to any services you are receiving or may receive from the University of Kansas or to participate in any programs or events of the University of Kansas. However, if you refuse to sign, you cannot participate in this study.

CANCELLING THIS CONSENT AND AUTHORIZATION

You may withdraw your consent to participate in this study at any time without adverse consequences unrelated to any physical or psychological results of such withdrawal. If you cancel permission to use your information, the researcher will stop collecting

additional information about you. However, the research team may use and disclose information that was gathered before they received your cancellation, as described above.

QUESTIONS ABOUT PARTICIPATION

Questions about procedures should be directed to the researchers listed at the end of this consent form.

PARTICIPANT CERTIFICATION:

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study. I understand that if I have any additional questions about my rights as a research participant, I may call (785) 864-7429 or (785) 864-7385, write the Human Subjects Committee Lawrence Campus (HSCL), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, or email irb@ku.edu.

I agree to take part in this study as a research participant. By my signature I affirm that I am at least 18 years old and that I have received a copy of this Consent and Authorization form.

Type/Print Participant's Name

Date

Participant's Signature

Researcher Contact Information

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APPENDIX B
Data Collection Tools

Intake Questionnaire

Participant #: _____

Age: _____

Race (Please circle 1): White Black Hispanic American Indian Alaska Native

Asian/Pacific Islander More than one race Other _____

Please indicate the highest level of education you have received:

8th grade or less some high school GED High School diploma

some college college graduate or more

Sentence length: _____

of times you have been incarcerated: _____

Have you previously attended any programs/treatments provided by the correctional facility? If so, which ones? If not, please state why.

Attendance Data Sheet

Please mark an 'X' next to your name in the appropriate session number box.

#	Participant Name	1	2	3	4

1. Please describe your reaction to being a part of this research study.

2. Please list anything you have learned during the group sessions (Ie-about yourself, others, musical skills, coping skills, anger management skills, etc.)

3. What was your favorite part of this experience? Why?

4. Would you participate in music therapy/verbal therapy groups again? Why or why not?

APPENDIX C
Intervention Procedures

Music Therapy Group Task Analysis

A. Opening Intervention

Title: “Not Afraid” live music listening & group re-creative experience

Total Length: 7-10 minutes

Materials Needed: guitar, variety of percussion & melodic instruments, chairs arranged in semi-circle, white board

Procedure:

1. Researcher will welcome to music therapy.
2. Researcher will invite participants to select 1 instrument.
3. Researcher will begin playing “Not Afraid” by Eminem on the acoustic guitar.
4. Researcher will invite participants to join her in playing their instruments and/or singing.
5. After cycling through the first verse and chorus 2 times, researcher will direct participants’ attention to the white board, which will read: “I am not afraid of _____.”
6. Researcher will continue cycling through the chord progression on the guitar but will musically cue participants to bring the volume down so that each person can share his name as well as respond to the statement on the board.
7. Once each participant has had an opportunity to share, researcher will bring the volume of the group music-making back up and will ask if any participant is interested in rapping for the group, providing lyrics if necessary.
8. Researcher will allow group music-making to end naturally and will facilitate discussion regarding personal reactions to experience.

B. Goals

Title: Evaluating Short-Term Goals from Previous Week

Total Length: 5-7 minutes

Materials: none

Procedures:

1. Researcher will begin by asking participants to recall the short-term goal he set for himself last week.
2. Researcher will ask participants to share if he met his short-term goal over the past week.
3. Researcher will remind participants that we will set new short-term goals before the end of the session.

C. Lyric Analysis

Title: “The Red” live music listening & lyric analysis focusing on Managing Aggression and Reducing Impulsivity

Total Length: 25-30 minutes

Materials Needed: guitar, typed lyric sheets, clipboards, writing utensils, white board, dry erase markers

Procedures:

1. Researcher will hand out lyrics to “The Red” by Chevelle and will introduce song.
2. Researcher will explain that she wants each participant to make note of any lyrics or parts of the song that resonate with him, whether he agrees, disagrees, can relate to it, reminds him of something, etc. Researcher will explain that following song listening, each participant will have an opportunity to share with the group during discussion.
3. Researcher will play/sing “The Red” on guitar.
4. Following the song, researcher will open group discussion by asking for personal interpretations and guiding discussion with the following questions:
 - a. What do you suppose “the red” represents in this song?
 - b. Can you relate to “seeing red again?” Or, do you know someone who has problems with “seeing red?”
 - c. What happens to our body when we begin to “see red?” (physiological and psychological changes)
 - d. How do we manage this aggression and reduce impulsiveness?
5. Researcher will have group brainstorm to come up with various situations in which participants are likely to become agitated or aggressive, how to avoid these situations, and cope more effectively with a range of problems and behaviors associated with aggression.
6. Researcher will quietly play chords of “The Red” while each participant has a chance to identify at least one provoking situation, one way to avoid this situation, and how to cope better with this situation.
7. Researcher will ask each participant to share what he wrote and will begin compiling answers on white board.
8. Following group sharing, researcher will conclude discussion

D. Setting Weekly Goals

Title: Short-Term Goals

Total Length: 7-10 minutes

Materials Needed: paper, writing utensils, clipboards

Procedures:

1. Researcher will discuss the importance of setting short-term goals.
2. Researcher will hand out blank sheets of paper to each participant and ask participant to select a specific behavior he wants to eliminate, add, or improve and make concrete plans for improvement over the next week.
3. Researcher will ask participants to share his goal with the group.

E. Group Closer

Title: Closing Improvisation

Total Length: 7-10 minutes

Materials Needed: variety of percussion and melodic instruments

Procedures:

1. Researcher will ask participants to select an instrument for closing improvisation.
2. Researcher will ask for a volunteer to initiate the improvisation.
3. Researcher will guide the group musically, providing added support when necessary, through the improvisation.
4. Improvisation will come to a natural end, and researcher will remind participants about next week's group.
5. Researcher will re-set the room.

Talk-Based Group Task Analysis

A. Opening Intervention

Title: “Not Afraid” writing intervention: reaction to prompt

Total Length: 7-10 minutes

Materials Needed: white board, paper for writing, pencils, chairs arranged in semi-circle

Procedure:

1. Researcher will welcome to group.
2. Researcher will invite participants to take 1 sheet of blank paper and 1 writing utensil.
3. Researcher will direct participants’ attention to the white board, which will read: “I am not afraid of _____.”
4. Researcher will ask each participant to take time to respond to the prompt by writing on the sheet of paper provided to him.
5. Researcher will ask each participant to share his name as well as respond to the statement on the board.
6. Once each participant has had a chance to share, researcher will facilitate discussion on why it might be important to identify things we are and are not afraid of and why.
7. Researcher will allow group discussion to end naturally.

B. Goals

Title: Evaluating Short-Term Goals from Previous Week

Total Length: 5-7 minutes

Materials: none

Procedures:

4. Researcher will begin by asking participants to recall the short-term goal he set for himself last week.
5. Researcher will ask participants to share if he met his short-term goal over the past week.
6. Researcher will remind participants that we will set new short-term goals before the end of the session.

C. Prompt & Group Discussion

Title: Managing Aggression and Reducing Impulsivity

Total Length: 25-30 minutes

Materials Needed: white board, paper, and writing utensils

Procedures:

1. Researcher will open group discussion by asking the following questions:
 - a. What is aggression? How does impulsivity fit into aggression?
 - b. Can you relate to feeling aggressive? Or, do you know someone who has problems with aggression?

- c. What happens to our body when we begin to feel aggressive or “lose control?” (physiological and psychological changes)
 - d. How do we manage this aggression and reduce impulsiveness?
2. Researcher will have group brainstorm to come up with various situations in which participants are likely to become agitated or aggressive, how to avoid these situations, and cope more effectively with a range of problems and behaviors associated with aggression.
3. Researcher will have each participant identify and write down at least one provoking situation, one way to avoid this situation, and how to cope better with this situation.
4. Researcher will ask each participant to share what he wrote and will begin compiling answers on white board.
5. Following group sharing, researcher will conclude discussion.

D. Setting Weekly Goals

Title: Short-Term Goals

Total Length: 7-10 minutes

Materials Needed: paper, writing utensils, clip boards

Procedures:

4. Researcher will discuss the importance of setting short-term goals.
5. Researcher will hand out blank sheets of paper to each participant and ask participant to select a specific behavior he wants to eliminate, add, or improve and make concrete plans for improvement over the next week.

E. Group Closer

Title: Sharing of Weekly Goals

Total Length: 7-10 minutes

Materials Needed: participants' goals

Procedures:

1. Researcher will ask participants to share their goals with the group.
2. Researcher will remind participants about next week's group.
3. Researcher will re-set the room.

