



# **MAPPING A CLINICAL RESEARCH AGENDA FOR CREATIVE FORCES**

**RECOMMENDATIONS BASED ON A RESEARCH SYNTHESIS AND GAP-ANALYSIS**

**A WORKING PAPER**

**PREPARED FOR THE  
NATIONAL ENDOWMENT FOR THE ARTS  
DEPARTMENT OF DEFENSE  
AMERICANS FOR THE ARTS**

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## ACRONYMS USED IN THIS REPORT

AFTA	Americans for the Arts
CATs	Creative Arts Therapies
DoD	Department of Defense
NEA	National Endowment for the Arts
NICoE	National Intrepid Center of Excellence
PTSD	Post-Traumatic Stress Disorder
TBI	Traumatic Brain Injury

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## EXECUTIVE SUMMARY

### PROJECT BACKGROUND

The National Endowment for the Arts (NEA), in partnership with the Department of Defense (DoD), established the Creative Forces: NEA Military Healing Arts Network in 2011. The partnership began by offering Creative Arts Therapies (CATs), specifically art and music therapy, to service members with traumatic brain injury and associated psychological health issues at two military medical facilities in the Washington, DC, area: the National Intrepid Center of Excellence (NICoE) at Walter Reed Bethesda in Maryland and the Intrepid Spirit Fort Belvoir in Virginia. It has since expanded to include 12 clinical sites across the nation and a telehealth program. The CATs are integrated into an interdisciplinary, intensive treatment program that addresses mind, body, and spirit; seeks to improve resilience and well-being; and supports patients in developing self-management of symptoms.

As the work of Creative Forces deepens and expands, the partners are investing in research on the impacts of CATs for active-duty service members, military veterans, and military-connected families, with an emphasis on understanding the biological and psychosocial benefits and comparative cost-effectiveness of these interventions. To inform the direction of future work, the NEA contracted with ProgramWorks to conduct a research synthesis and gap-analysis by reviewing existing research and interviewing several authorities. This synthesis document is a critical step toward developing a research agenda for the Creative Forces: NEA Military Healing Arts Network.

### KEY FINDINGS

There are many layers of complexity surrounding CAT interventions. There are differences in clinical practices and in theoretical explanations for clinical outcomes. Additionally, research practices for each CAT type (e.g., art therapy, music therapy, and dance/movement therapy) are in various states of evolution. Significantly, Creative Forces offers CATs in the context of integrative medicine, rather than as standalone treatments. In addition, the populations served by the program are circumscribed, yet dealing with complex issues. They are veterans, active-duty service members, and military-connected families grappling with the effects of post-traumatic stress disorder (PTSD), traumatic brain injury (TBI), and related psychological and medical issues.

The Creative Forces research initiative will operate within this complex environment. In brief, complicating factors include: different clinical practices across CAT types; the status of CAT research evidence and research practices across CAT types; the unique populations served by Creative Forces; and the role of CATs in integrative medicine. In addition, there is the perennial challenge—by no means restricted to the CATs—of efficient knowledge exchange between clinicians and researchers.

***The diverse nature of CATs.*** The CATs differ on many dimensions: modality, clinical approach, and development as a discipline. Further, within each CAT, there are multiple theoretical perspectives that are used to drive clinical practices and explain treatment outcomes. The diversity of CATs presents a challenge for establishing a unified research agenda around the use of CATs and therapeutic/expressive writing.

***The status of CAT research.*** While research into CAT and therapeutic/expressive writing outcomes suggests various benefits for specific therapeutic approaches, there are many limitations to this research. The studies often have yielded descriptive findings rather than outcomes-based evidence about the direct effects of these intervention. For the CATs overall, there is a need for more theory-driven research to formulate compelling hypotheses and research questions.

Also needed is more careful selection of study designs and outcome measures that align with those hypotheses and research questions, while accounting for the constraints and opportunities of the clinical practice setting. (Consistent with this requirement is a need to understand and appreciate the hierarchy of evidence-based practice so that any claims about research findings are appropriate to the study outcomes.) As part of any clinical research protocol, moreover, it remains necessary to keep accurate records of CAT treatment methodologies and implementation. Finally, effective dissemination of data, metrics, and evidence is essential to the advancement of such research.

***The complexities of the populations Creative Forces serves.*** Creative Forces supports military-connected personnel with PTSD and/or TBI, as well as their families. PTSD and TBI are distinct conditions, each with various causes and impacts. Individually and in tandem, they have complex substrates, and their impacts span an individual's physical, psychological, and social existence.

***The use of CATs in integrative medicine.*** While there are research models for studying therapeutic interventions within integrative medicine, the research on CATs in this context has been minimal.

***CAT research/practice knowledge gaps.*** Across interviews and the reviews of CAT literature, there was consensus that a significant gap exists between knowledge of the clinical practices of CATs and knowledge of effective research practices. This gap contributes to a dearth of outcomes-based evidence on the use of CATs.

## RESEARCH RECOMMENDATIONS

**Establish research priorities based on the research gap-analysis and the detailed findings of the synthesis. Potential initial steps include:**

- Develop a Logic Model/Theory of Change with Creative Forces as an umbrella program that utilizes CATs as interventions within integrative medicine.
- Develop individual Logic or Measurement Models for priority CATs and/or for therapeutic/expressive writing.
- Investigate existing research models and measurement tools used to study psychological and physiological outcomes of specific interventions within integrative treatment settings.
- Consider multi-site studies to increase study size and generalizability of results.
- Adopt an intentional approach to build research/practice partnerships and greater capacity for research by various parties.

**Identify specific areas of focus for a Creative Forces CAT research agenda. A Creative Forces Logic Model/Theory of Change, as well as CAT-specific Logic/Measurement Models for the program, will**

help to identify priorities and the logical sequencing of this research. Meanwhile, specific research questions that emerged from the synthesis and gap-analysis include:

#### **CAT implementation**

- How can CAT interventions be quantified so the variables of dose and duration can be measured?
- How are outcomes related to key treatment variables, such as length of session, duration of treatment, individual versus group therapies, and co-treatments with other disciplines?
- Which CAT treatment outcomes are replicable for specific diagnoses and with specific populations?
- How does the timing of CAT intervention, relative when the trauma, injury, or military discharge occurred, impact outcomes?
- How do CAT interventions and outcomes differ for military populations: for active-duty service members, veterans, and military-connected families?

#### **CATs and integrative care**

- What are the benefits of CATs to an integrative care model?
- What are the relationships between CATs and other treatments within integrative care?
- To what extent and in what ways can CATs serve as replacement therapies for pharmacotherapy?

#### **CAT mechanisms**

- Based on the theoretical foundations for individual CATs, what hypotheses can be advanced about physiological or neurological mechanisms associated with treatment outcomes, and what are the relevant biomarkers?
- What are potential common mechanisms of change (e.g. stress reduction, client-therapist relationship, memory consolidation) across CATs and how can they be tested?

#### **CATs and TBI/PTSD**

- To what extent should CAT treatment protocols differ for PTSD and TBI, given the mechanisms of these conditions?
- How do CATs impact PTSD and TBI outcomes?
- If CATs impact emotional regulation and social engagement, what are the physiological and neurobiological correlates of those changes in individuals with PTSD and TBI?
- How do CATs affect the course of recovery from TBI, and can this be documented in neurobiological terms?
- Does including pain as an element of the polytrauma triad (PTSD, TBI, pain) impact outcomes?

#### **CATs and other impacts**

- What are the long-term impacts of CAT interventions, as identified through follow-up studies?
- To what extent do CATs result in clients' increased capacity to work?
- To what extent do CATs reduce health care costs?





## INTRODUCTION

### PROJECT BACKGROUND

The National Endowment for the Arts (NEA), in partnership with the Department of Defense (DoD), established the Creative Forces: NEA Military Healing Arts Network in 2011. The partnership began by offering Creative Arts Therapies (CATs), specifically art and music therapy, to service members with traumatic brain injury and associated psychological health issues at two military medical facilities in the Washington, DC, area: the National Intrepid Center of Excellence (NICoE) at Walter Reed Bethesda in Maryland and the Intrepid Spirit Fort Belvoir in Virginia. The CATs are integrated into an interdisciplinary, intensive treatment programs that addresses mind, body, and spirit; seeks to improve resilience and well-being; and supports patients in developing self-management of symptoms. In this integrated health model, CATs provide direct patient care and contribute to diagnostics and progress monitoring.

The Creative Forces program recently expanded to include services for active-duty service members, military veterans, and military-connected families. It has also expanded geographically and now includes 12 clinical sites across the nation, providing interventions by CAT clinicians in those military treatment facilities for active service members, veterans, and their families. A telehealth program extends access to CATs for those who live in remote locations not in proximity to a treatment center, or who are homebound.

Creative Forces has received recognition and support from Congress, which appropriated a \$1.98 million budget increase for the NEA in fiscal year 2016, specifically allocated to expand the military healing arts program. In 2017, the Department of Veterans Affairs also joined the network. As the work of Creative Forces deepens and expands, the partners are investing in research on the impacts of CATs for active-duty service members, military veterans, and military-connected families, with an emphasis on understanding the biological and psychosocial benefits and comparative cost effectiveness of these interventions.

To inform the direction of future work, the NEA contracted with ProgramWorks to conduct a research synthesis and gap-analysis by reviewing existing research and interviewing several authorities. The NEA has planned several convenings to showcase current research and to gather input from researchers and practitioners. This work will help to support the development of a Creative Forces research agenda.

There are layers of complexity in conducting a research gap-analysis and developing a research agenda for the Creative Forces program. Between and within CAT disciplines (art, music, and dance/movement therapies), there are differences in clinical practices and in theoretical explanations for clinical outcomes. (In this report, therapeutic/expressive writing is considered alongside the CATs as a technique or practice.) Additionally, the CATs are in various states of research practice. Significantly, Creative Forces offers CATs in the context of integrative medicine, rather than as standalone treatments. In addition, the populations served by the program are circumscribed: veterans, active-duty service members, and military-connected families dealing with post-traumatic stress disorder (PTSD), traumatic brain injury (TBI), and related psychological and medical issues. The military context, including the funding structure and clinical and research protocols, must be acknowledged when developing a clinical research program. While these contextual factors create complexity, they also contribute to the potential richness of the research.

This synthesis document is a critical step toward developing a research agenda for the Creative Forces: NEA Military Healing Arts Network. It reviews CATs as individual disciplines and/or techniques and in the context of integrative medicine, and it summarizes the early CAT research conducted through the Creative Forces program by practitioners and research partners. It also summarizes CAT outcomes for other military, PTSD, and TBI populations, and it identifies gaps in CAT research methodologies. Based on these findings, this synthesis concludes with research recommendations and other considerations for Creative Forces, building toward a research strategic framework and five-year agenda. The framework and agenda will yield new knowledge about the benefits associated with CATs that are embedded within integrative care for the improved health and well-being of military service members, veterans, and their families.

## PROJECT APPROACH

This research synthesis was based on a qualitative review of existing research documents and studies and interviews with field experts, so as to contribute toward a Creative Forces clinical research agenda.

***Documents and studies.*** The research team reviewed documents and reports provided by the project team, as well as research reports, white papers, and existing literature reviews identified through journal and library databases, professional websites associated with CATs, Internet searches, and interviews. Searches focused on topics relevant to the clinical practices and research interests of Creative Forces, including art, dance/movement, and music therapies, therapeutic/expressive writing interventions, integrative medicine, PTSD and TBI, and military populations. Findings were synthesized using a narrative review methodology.

***Interviews with field experts.*** The research team conducted 13 phone interviews with field experts relevant to this study. Interviewees were identified by the Creative Forces team and its affiliated researchers, and were selected based on their clinical and/or research expertise in CATs, PTSD, TBI, interventions with veterans and other military personnel, and associated neural and psychophysical processes. Interviewees included representatives from agencies, organizations, and fields of research relevant to the Creative Forces research agenda. ProgramWorks utilized a semi-structured interview approach and tailored each interview to address the interviewee's areas of expertise. Table 1 includes the full list of interviewees and their current primary affiliations.

**Table 1.**  
**Interview List**

<b>Interviewee</b>	<b>Current Affiliation</b>
Alisha Ali	New York University Steinhardt: Associate Professor Applied Psychology
Debra Burns	Indiana University Purdue: Chair Department of Music and Arts Technology and Professor of Music Therapy
Rita Charon	Columbia University: Professor of Medicine and Executive Director of Narrative Medicine
Mihaly Csikszentmihalyi	Claremont University: Distinguished Professor of Psychology and Management and Co-director of the Quality of Life Research Center
Sarah Deaver	Eastern Virginia Medical School: Professor Department of Psychiatry & School of Health Professions

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Emmeline Edwards	National Institutes of Health, National Center for Complementary and Integrative Health: Director Division of Extramural Research
Paula Howie	George Washington University Columbian College of Arts & Sciences, Art Therapy Program: Associate Professorial Lecturer
Susan Magsamen	Johns Hopkins University School of Medicine: Executive Director International Arts + Mind Lab, Brain Science Institute
Donald McGeary	University of Texas Health Science Center: Associate Professor Department of Psychiatry
James Pennebaker	University of Texas at Austin: Professor Department of Psychology
Joshua Smyth	Pennsylvania State University: Distinguished Professor of Biobehavioral Health and Medicine
Michael Thaut	University of Toronto: Professor of Music, Professor of Neuroscience, Director Music and Health Research
Allison Winters	Walter Reed National Military Medical Center National Intrepid Center of Excellence: Wellness Coordinator

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## FINDINGS

This report focuses on clinical and research practices spanning several domains represented by Creative Forces: specifically, creative arts therapies, post-traumatic stress disorder, traumatic brain injury, integrative medicine, and clinical research. It provides an overview of creative arts therapies, with a focus on art, dance/movement, and music therapies, as well as therapeutic/expressive writing, which comprise Creative Forces. It explores the theoretical foundations, commonalities, and differences among the therapies, as well as their applications in integrative medicine and with military and related populations. There is special attention to biological and psychosocial factors and to the comparative cost effectiveness of creative arts interventions, as knowable through the research. The intention is to provide an empirical basis for considering the future direction of clinical research within the Creative Forces program.

### SECTION 1: OVERVIEW OF CREATIVE ARTS THERAPIES (CATs)

#### What Are Creative Arts Therapies?

CATs are the formal therapeutic practices that use the arts in the context of psychotherapy, counseling, rehabilitation, and/or medicine. Each CAT discipline has a distinct definition, clinical practice, hypothesized mechanisms of change, and intended outcomes.<sup>1</sup> This synthesis focuses on the primary CATs—art therapy, music therapy, and dance/movement therapy—as well as the technique of therapeutic/expressive writing currently in use by Creative Forces.

CATs have been used in a variety of therapeutic settings with patients being treated for a range of psychological and physical issues, including AIDS, asthma, burns, cancer, substance abuse/chemical

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<sup>1</sup> For example, see Vick, R.M. (2012). A brief history of art therapy. In C.A. Malchiodi (Ed.), *Handbook of art therapy* (2<sup>nd</sup> Ed.). New York: Guilford Press.

dependency, mood disorders, anxiety disorders, neurological conditions, sequelae of trauma, and specific psychotherapeutic needs.<sup>2</sup> Music engagement, expressive art-making, movement-based creative expression, and therapeutic/expressive writing are the most common interventions used by CAT clinicians in healthcare settings.<sup>3</sup> They can be found in mental health, medical, and rehabilitation contexts, and educational settings, and may be integrated into preventative health care and complementary medical interventions.

In these various care settings, CATs may be offered as a standalone form of therapy or they may be integrated into other treatment programs. Clinicians' observations during CAT interventions provide insights into the nature of a patient's presenting condition and co-occurring psychological and physical symptoms,<sup>4</sup> which can aid in diagnosis and in treatment planning. Positive psychological and physical outcomes have been documented for CATs with many different patient populations, including those with PTSD and TBI (see Section 4 below).

As with some forms of psychotherapy, the goals of CATs are broadly to decrease distress, foster personal growth, and support positive change. They emphasize the therapeutic relationship, draw from the same theoretical foundations, have clear clinical goals, and may occur in individual or group settings. CATs, however, uniquely integrate creative practices into the therapeutic process, integrating elements of psychotherapy and artistic disciplines. Distinguishing hallmarks of CAT practices include self-expression, active participation, imagination/creativity, and mind-body connections. In addition, several psychotherapeutic processes, particularly relevant to trauma treatment, are generated and witnessed through CATs.

***Self-expression.*** CATs incorporate both nonverbal and verbal self-expression. Based on the understanding that thoughts, feelings, and memories are not exclusively language-based or organized in a narrative form, CATs use nonverbal, creative processes to access personal stories, memories, and experiences through the senses and movement. In most contemporary CAT practices, the creative arts therapist also facilitates the client's verbal reflection on the creative work they have generated, which assists the client in gaining personal meaning and in making sense of emotions, memories, and perceptions.<sup>5</sup>

***Active participation.*** CATs encourage clients to actively participate in the therapeutic process through art-making, movement, performance, and/or writing. Active involvement redirects the client's

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<sup>2</sup> Vick, 5-16.

<sup>3</sup> Stuckey, H.L., and Nobel, J. (2010). The connection between art, healing and public health: A review of current literature. *American Journal of Public Health, 100*(2): 254-263; American Music Therapy Association (2014). *Music Therapy and Military Populations*. Silver Spring, MD: American Music Therapy Association. [http://www.musictherapy.org/assets/1/7/MusicTherapyMilitaryPops\\_2014.pdf](http://www.musictherapy.org/assets/1/7/MusicTherapyMilitaryPops_2014.pdf)

<sup>4</sup> Walker, M.S., Kaimal., G., Gonzaga, A.M.L., Myers-Coffman, K.A., and DeGraba, T. (2017). Active-duty military service members' visual representations of PTSD and TBI in masks. *International Journal of Qualitative Studies in Health and Well-being, 12*(1): 1-12.

<sup>5</sup> Estrella, K. (2005). Expressive therapy: An integrated arts approach. In C. A. Malchiodi (Ed.), *Expressive therapies*. New York: Guilford Press; Malchiodi, C.A. (2005). Expressive therapies: History, theory, and practice. In C.A. Malchiodi (Ed.), *Expressive Therapies*. New York: Guilford Press; Smith, A. (2016). A literature review of the therapeutic mechanisms of art therapy for veterans with post-traumatic stress disorder. *International Journal of Art Therapy, 21*(2): 66-74.

awareness to an external process and represents personal investment in the therapeutic process.<sup>6</sup> CATs also allow individuals to exercise their own preferences in how to approach their challenges and the goals they wish to achieve.<sup>7</sup> CATs are distinguished from passive exposure to arts media, such as listening to music or observing a painting, although these may be incorporated into CAT treatment protocols.

***Imagination/creativity.*** CATs utilize imagination and creativity therapeutically. While some CAT practitioners differentiate between imagination and creativity and their roles in therapy, the intention is to encourage unique, individualized, generative self-expression. This open expression serves many purposes, such as providing a sense of enjoyment or enabling a client to consider alternative approaches to their problems.<sup>8</sup>

***Mind-body connections.*** CATs seek to enhance mind-body connections through the use of senses and movement.<sup>9</sup> The use of CATs for treating trauma, TBI, and other medical and psychological difficulties, is based, in part, on the understanding that emotions, experiences, and memory are held or mediated by neurological and physiological mechanisms.

***Psychotherapeutic processes that are generative and witnessed.*** Unlike most standard psychotherapies, the CAT client generates a physical manifestation of the therapeutic process. Further, this generative process is witnessed by the therapist and, in some settings, by peers. In CATs, the creative process facilitates externalization, containment, and memory integration, which are therapeutic mechanisms for treatment of trauma. With externalization, for example, clients generate an art object, movement, or story, or song which then allows them to consider their problem or distress as separate, or external, from themselves. Containment refers to the therapeutic process of managing distressing thoughts, feelings, and behaviors. CATs use an image, action, or writing exercise to “contain” stress and its expression. Trauma survivors may also experience memory fragmentation, as well as dissociation of traumatic memories from awareness. CATs can support integration of memories for the purpose of healing through symbolic representation and by accessing memories through nonverbal processes.<sup>10</sup>

## **Art, Music, Dance/Movement, and Therapeutic/Expressive Writing**

This synthesis focuses on the three core CATs—art therapy, music therapy, and dance/movement therapy—and on the technique of therapeutic/expressive writing currently used in the Creative Forces program. While sharing basic principles of psychotherapy, they differ in practice.

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<sup>6</sup> Malchiodi (2005). *Expressive therapies: History, theory, and practice.*

<sup>7</sup> Malchiodi, C.A., (2012). *Art therapy with combat veterans and military personnel.* In C.A. Malchiodi (Ed.), *Handbook of art therapy* (2<sup>nd</sup> Ed.). New York: Guilford Press

<sup>8</sup> Estrella, (2005); Gladding, S. (2011). *The creative arts in counseling.* (4<sup>th</sup> Ed.). Alexandria, VA: American Counseling Association; Malchiodi, C.A. (2005). *Expressive therapies: History, theory, and practice.* In C.A. Malchiodi (Ed.), *Expressive Therapies.* New York: Guilford Press

<sup>9</sup> Malchiodi (2005). *Expressive therapies: History, theory, and practice.*

<sup>10</sup> Smith (2016).

**Art Therapy.** The American Art Therapy Association defines art therapy as follows:

Art Therapy is an integrative mental health and human services profession that enriches the lives of individuals, families, and communities through active art-making, creative process, applied psychological theory, and human experience within a psychotherapeutic relationship. Art Therapy, facilitated by a professional art therapist, effectively supports personal and relational treatment goals as well as community concerns. Art Therapy is used to improve cognitive and sensory-motor functions, foster self-esteem and self-awareness, cultivate emotional resilience, promote insight, enhance social skills, reduce and resolve conflicts and distress, and advance societal and ecological change.<sup>11</sup>

Adding a neuroscience perspective, King offers the following:

Art therapy is a profession that facilitates psychic integration through the creative process and within the context of the therapeutic relationship. Conscious and unconscious mental activity, mind–body connectedness, the use of mental and visual imagery, bilateral stimulation, and communication between the limbic system and cerebral cortex functioning underscore and illuminate the healing benefits of art therapy—none of which could take place without the flexibility of neuronal processes, otherwise known as neuroplasticity.<sup>12</sup>

The CAT practice of art therapy uses a range of media and processes, including: drawing, painting, sculpting, collage-making, photography, and computer-assisted imagery. The choice of media is determined by the length of therapy, ease of use, transportability of materials, adaptability to a setting, treatment goals, therapist expertise with the media, and client preference.

In therapy, art-making serves as a visual language, enabling clients to express thoughts and feelings they have difficulty putting into words. As is the case with psychotherapy, many theoretical perspectives have been claimed as the basis for visual art therapy. In turn, each theoretical foundation influences how the therapy is conducted, the expectations for clinical outcomes, the hypothesized mechanisms for change, and the approach to assessment. Theoretical foundations and clinical approaches most commonly draw from psychoanalytic, psychodynamic, cognitive behavioral, and humanistic literature, and from Gestalt psychology. Systems theory and principles of marriage/family therapy guide visual art therapy with families.

**Music Therapy.** The American Music Therapy Association provides this definition of music therapy:

Music Therapy 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 Therapy is

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<sup>11</sup> <https://arttherapy.org/about-art-therapy/>

<sup>12</sup> King, J.L. (2016). Art Therapy: A Brain-based Profession. In David E. Gussak and Marcia L. Rosal (Eds.), *The Wiley handbook of art therapy*. Malden, MA: Wiley.

an established health profession in which music is used within a therapeutic relationship to address physical, emotional, cognitive, and social needs of individuals. After assessing the strengths and needs of each client, the qualified music therapist provides the indicated treatment including creating, singing, moving to, and/or listening to music. Through musical involvement in the therapeutic context, clients' abilities are strengthened and transferred to other areas of their lives. Music therapy also provides avenues for communication that can be helpful to those who find it difficult to express themselves in words. Research in music therapy supports its effectiveness in many areas such as: overall physical rehabilitation and facilitating movement, increasing people's motivation to become engaged in their treatment, providing emotional support for clients and their families, and providing an outlet for expression of feelings.<sup>13</sup>

Further, the American Music Therapy Association notes that music therapy can support wellness, stress management, pain management, the expression feelings, memory, communication, and physical rehabilitation.

Within the field of music therapy, there are multiple systems to classify clinical models and methodology and to distinguish between underlying theoretical perspectives.<sup>14</sup> Some systems classify approaches by their foundations in psychological theory (e.g. psychodynamic, behavioral, humanistic). Others are based on type of practice (e.g. medical, psychotherapeutic, recreational). There is also an extensive history of theory and research on the psychology, physiology, and neuroscience of music, which contributes to the practice of music therapy as well as the theories about mechanisms that lead to change.

Depending on the model and clinical goals, music therapy may include improvisation, recreating pre-composed music, original composition, and/or receptive experiences. In some approaches, the music making process is seen as the primary and key agent of change, without necessarily involving verbalization. Other approaches consider verbal processing of the music experience essential for insight and change. These approaches are not mutually exclusive.

Of the CATs presented in this document, music therapy has the most extensive physiological and neurological research base, both to document and explain the therapeutic impact.<sup>15</sup> From this base, a system of therapeutic techniques has emerged into a new practice of neurologic music therapy. It has also generated a scientific model to investigate the linkages between music and therapy, which may serve as a model for other CAT research.<sup>16</sup>

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<sup>13</sup> <https://www.musictherapy.org/about/quotes/>

<sup>14</sup> Forinash, M. (2005). Music therapy. In C.A. Malchiodi (Ed.), *Expressive therapies*. New York: Guilford Press; Wigram, T., Pedersen, I.N., and Bonde, L.O. (2002). *A comprehensive guide to music therapy: Theory, clinical practice, research and training*. Philadelphia: Jessica Kingsley Publishers.

<sup>15</sup> For example, Aldridge, D. (Ed.) (2005). *Music therapy and neurological rehabilitation*. Philadelphia: Jessica Kingsley Publishers.

<sup>16</sup> Thaut, M.H., McIntosh, G.C., and Hoemberg, V. (2011). Neurologic music therapy: From social science to neuroscience. In M.H. Thaut and V. Hoemberg, (Eds.), *Handbook of neurologic music therapy*. Oxford: Oxford University Press.



**Dance/Movement Therapy.** The American Dance Therapy Association (ADTA) defines dance/movement therapy as follows:

Dance/movement therapy is the psychotherapeutic use of movement to promote emotional, social, cognitive and physical integration of the individual for the purpose of improving health and well-being. Dance/movement therapy is:

- Focused on movement behavior as it emerges in the therapeutic relationship. Expressive, communicative, and adaptive behaviors are all considered for group and individual treatment. Body movement, as the core component of dance, simultaneously provides the means of assessment and the mode of intervention for dance/movement therapy.
- Practiced in mental health, rehabilitation, medical, educational and forensic settings, and in nursing homes, day care centers, disease prevention, health promotion programs and in private practice.
- Effective for individuals with developmental, medical, social, physical and psychological impairments.
- Used with people of all ages, races, and ethnic backgrounds in individual, couples, family, and group therapy formats.<sup>17</sup>

According to the field, dance/movement therapy intends to support clients in self-expression, relationships to others, and acceptance of their bodies. The practice encourages new behaviors, provides symbolic ways to communicate emotions, releases anxiety and stress, and provides a means of integrating body, mind, and spirit. There is an emphasis on the individual attending to his or her physical state and developing body and kinesthetic awareness to understand their underlying emotions and their physiological mechanisms. Clinical practices include improvisation, developing choreography, and a variety of specific movement activities.<sup>18</sup>

Theoretical foundations for dance/movement therapy stem from psychological (e.g. psychodynamic, behavioral), developmental, systems, and physiological theories. They also stem from a belief in the importance of integrating the mind, body, and spirit for mental and physical health. This has led to medical applications of the discipline with a focus on stress and coping, improving self-efficacy, and enhancing mood, among other needs that individuals experience when managing medical issues.<sup>19</sup>

**Therapeutic/Expressive Writing.** Relative to the CATs described above, therapeutic/expressive writing exists more as a paradigm or technique, which is integrated into a therapeutic process. Therapeutic writing may be broadly defined as “client expressive and reflective writing, whether self-generated or suggested by a therapist/researcher” and can include a variety of writing formats such as poetry, narratives, or journals. In the 1980s, Pennebaker began exploring the psychological and health benefits of disclosing one’s experiences of trauma and ultimately the therapeutic impact of using writing as a

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<sup>17</sup> <https://adta.org/faqs/>

<sup>18</sup> Loman, S.T. (2005). Dance/Movement therapy. In C.A. Malchiodi (Ed.), *Expressive therapies*. New York: Guilford Press. See also H. Payne (Ed.). (2006). *Dance movement therapy: Theory, research and practice*. New York: Routledge.

<sup>19</sup> Goodill, S.S. (2005). *An introduction to medical dance/movement therapy*. Philadelphia: Jessica Kingsley Publishers.



form of disclosure. As a specific research and clinical practice, “Expressive writing is a technique where people typically write about an upsetting experience for 15 to 20 minutes a day for three or four days.”<sup>20</sup> The purpose of the practice is to help individuals “understand and deal with emotional upheavals in their lives.” Research has found this technique of therapeutic/expressive writing to be associated with decreased use of health services, increased sense of personal value, improved test outcomes, and enhanced immune system functioning.<sup>21</sup> Literature reviews on therapeutic/expressive writing and health outcomes, including several randomized controlled trials, show positive outcomes using a range of measures, including pain severity, pain control, mood, sleep, and biomarkers of immune functioning, cardiovascular, and liver function.<sup>22</sup>

In addressing the theories and mechanisms for the positive effects of therapeutic/expressive writing, Pennebaker has noted that no single theory can explain these effects. Several mechanisms may be at work, including positive physiological and psychological effects of no longer withholding a trauma, activating emotion to enable change, becoming habituated or desensitized to the internal emotional experience, and providing cognitive access to emotion through verbal channels, which lends structure and coherence to the trauma.<sup>23</sup>

### Assessments and Outcomes Measurements in Creative Arts Therapies

Expected outcomes for a given treatment arise from hypotheses about how the treatment works, or its mechanisms of impact. As evident in the brief review of art, music, and dance/movement therapy, and therapeutic/expressive writing, each practice ascribes to multiple underlying theories and mechanisms of change. When assessing outcomes and measuring impact, this factor creates a challenge in where to look for change and how to measure it. Based on interviews and reviews of the literature within and across the three CATs and the technique of therapeutic/expressive writing, several conditions appear to be true:

- Art, music, and dance/movement therapies, and therapeutic/expressive writing are at very different stages in developing assessment tools and outcomes measurement.
- Within a given CAT, practitioners may develop their own protocols, such as exit interviews with clients about the perceived outcomes of therapy. These may or may not be shared within the discipline. As a result, there is a multiplicity of approaches to assessing client progress and outcomes.
- Currently CAT assessments cover a wide range of parameters, including client experience of therapy, therapist perceptions of therapeutic progress, psychological variables (e.g. self-esteem, mood, anxiety, cognition), physiological variables (e.g. neurological, cardiovascular, and immune

<sup>20</sup> Pennebaker, J.W., and Smyth, J.M. (2016). *Opening up by writing it down* (3<sup>rd</sup> Ed.). New York: Guilford Press.

<sup>21</sup> For example: Baddeley, J.L. and Pennebaker, J.W. (2011). A Postdeployment expressive writing intervention for military couples: A randomized controlled trial. *Journal of Traumatic Stress*, 24 (5): 581–585; Frattaroli, J., Thomas, M., and Lyubomirsky, S. (2011). Opening up in the classroom: Effects of expressive writing on graduate school entrance exam performance. *Emotion*, 11(3): 691-696.

<sup>22</sup> Baikie, K.A., and Wilhelm, K. (2005). Emotional and physical health benefits of expressive writing. *Advances in Psychiatric Treatment*, 11(5), 338-346; Stuckey and Nobel, 254-263.

<sup>23</sup> Pennebaker, J.W., and Chung, C.K. (2011). Expressive writing: Connections to mental and health conditions. In H.S. Friedman (Ed.), *The Oxford handbook of health psychology*. Oxford: Oxford University Press.

function), health variables (e.g. pain), behavioral variables (e.g. social interaction, coping behaviors), among others.

- Most consistent outcomes measurement relies on instruments that assess psychological or physical variables, such as depression symptoms or physiological responses. Some of these tools have the benefit of proven reliability and validity.

Valid assessment and outcomes monitoring measures are essential for monitoring client progress and for making treatment decisions. These factors are also critically important for effective research and for identifying evidence-based practices. The multiplicity of predicted outcomes and the variety of assessment tools currently in use within a given CAT present a challenge to advancing research within these fields, and there is general agreement that work is needed in this area.<sup>24</sup>

### **CAT Professions: Relevance to Research**

In conversations with interviewees and in reviews of CAT literature, issues of education, credentialing, and ongoing professional development arose in the context of research. These issues can affect CAT research collaborations, a research workforce for CAT, and the quality of future studies of CAT.

Currently, only a small number of states provide standalone licensure and only in some CAT disciplines. To practice independently and to receive third-party reimbursement, many CAT practitioners are licensed in related fields as social workers, professional counselors, or mental health professionals. There are certifications available through some CAT professional organizations (see Appendix A for examples of requirements). While the professional organizations provide standards of practice, the variations in academic preparation, licensure, and certification requirements lead to significant variations in CAT practices and practitioners.<sup>25</sup> Further, licensed therapists who are not credentialed may incorporate creative arts into their practices. This factor can present a challenge for identifying qualified CAT research and clinical partners. Practitioners also noted there is interest in conducting quality research to demonstrate positive outcomes from CATs to support third-party reimbursements and to drive policy around licensure and credentialing.<sup>26</sup>

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The essential relationship between the CATs (as professions) to research, as well as the relevance to the Creative Forces research agenda, are evident in this reflection from the field of art therapy:

The field of art therapy is poised to empirically demonstrate that “art therapy works.” To move forward, an assertive campaign is required on several levels to establish this assertion: (1) training students at the master’s and doctoral levels to conduct experimental and control group studies; (2) publishing master’s and doctoral experimental research studies; (3) mentoring practicing art therapists to learn how to conduct experimental research through involvement in multi-site studies; (4)

<sup>24</sup> For example: Malchiodi, (2005), *Expressive therapies: History, theory, and practice*; Betts, D. (2013). A review of the principles for culturally appropriate art therapy assessment tools. *Art Therapy: Journal of the American Art Therapy Association*, 30(3): 98–106.

<sup>25</sup> Greenstone, L. (2016). Issues in Credentialing and Licensing for Art Therapy in the United States: Who Ate My Pie? In David E. Gussak and Marcia L. Rosal (Eds.), *The Wiley handbook of art therapy*. Malden, MA: Wiley.

<sup>26</sup> Robb, M. (2016). An overview of historical and contemporary perspectives in art therapy research in America. In David E. Gussak and Marcia L. Rosal (Eds.), *The Wiley handbook of art therapy*. Malden, MA: Wiley.

collaborating on such studies with colleagues in related fields; and (5) identifying funding for experimental and control group studies, while simultaneously training art therapists to successfully obtain grant funding. This initiative will yield new, exciting experimental design studies that join the meritorious, albeit small, body of research that demonstrates the power of art therapy. It is our responsibility to establish that art therapy works. Attaining this goal might lead to licensure and insurance reimbursement for art therapists across the United States. Experimental research by art therapists is critical to uncovering the capability of art therapy to heal.<sup>27</sup>

Similarly, the American Music Therapy Association has identified research as a strategic priority with an operational plan that: a) addresses the direction of research in support of evidence-based music therapy practice and improved workforce demand; and b) recognizes and incorporates, where necessary, federal, state, and other entity requirements for evidence-driven research as it relates to practice policy and reimbursement. The Association notes:

Essentially, the strategic priority on research includes a cultural shift such that using or consuming research is an integral and natural part of the music therapist's toolkit and practice... This certainly does not negate or dismiss other critically important music therapy research activities. However, an important effort of the strategic priority is to discuss and emphasize the integral relationship between research findings, music therapy practice, and music therapy advocacy.<sup>28</sup>

The goals and objectives for the research strategic priority address professional education, research dissemination, research agenda, evidence-based practices, and workforce implications. The plan intends to support a music therapist in "being a good consumer of music therapy research findings, understanding how other people view and assess research in music therapy, and the ability of MTs to respond to questions or concerns about music therapy research."

## SECTION 2: CATS IN INTEGRATIVE MEDICINE

Integrative medicine, a term first introduced in the mid-1990s, refers to bringing conventional approaches to medicine together with complementary approaches in a coordinated way.<sup>29</sup> An approach is considered complementary if it falls outside of Western or conventional medicine. The National Center for Complementary and Integrative Health identifies two subgroups of complementary health approaches: Natural Products (e.g. herbs, vitamins and minerals) and Mind and Body Practices (e.g. deep breathing, yoga, chiropractic manipulation). Integrative medicine takes into account the whole person and involves choice and patient participation. In theory, integrative medicine brings together the best conventional and complementary approaches to produce better physical, emotional, mental, and spiritual outcomes, while also being cost effective.

<sup>27</sup> St John, P. (2016). Experimental and control group research designs. In David E. Gussak and Marcia L. Rosal (Eds.), *The Wiley handbook of art therapy*. Malden, MA: Wiley.

<sup>28</sup> [https://www.musictherapy.org/research/strategic\\_priority\\_on\\_research/](https://www.musictherapy.org/research/strategic_priority_on_research/)

<sup>29</sup> U.S. Department of Health and Human Services, National Institute of Health. <https://nccih.nih.gov/health/integrative-health#integrative>

The use of complementary health care approaches has been fairly consistent across the United States. Results from the National Health Interview Survey show that approximately one-third of the U.S. adult population has reported using complementary health care approaches in the last twelve months. This has been consistent during three administrations of the survey: 32.3% in 2002, 35.5% in 2007, and 33.2% in 2012.<sup>30</sup> Children, ages 4 to 17, also use complementary health approaches although in smaller percentages: for example, 12.0% in 2007 and 11.6% in 2012.<sup>31</sup> U.S. adults most often used complementary medicine for pain, and the use of natural products was the most common approach. Approximately 59 million Americans spend \$30.2 billion a year in out-of-pocket costs for complementary medicine approaches, representing 9.2% of all out-of-pocket spending on health care.<sup>32</sup> Partial insurance coverage was more common than complete coverage for complementary approaches.

Clinics and hospitals have responded to the demand for complementary health care approaches. To understand the prevalence of complementary approaches in hospital settings, the Samueli Institute administered the 2010 Complementary and Alternative Medicine Survey of Hospitals. The findings showed that 42% of responding hospitals had one or more complementary or alternative therapies.<sup>33</sup> The six most common outpatient therapies included: massage therapy (64%), acupuncture (42%), guided imagery (32%), meditation (31%), relaxation (30%), and biofeedback (28%). When used as an outpatient treatment, the approaches were generally for preventative or acute care. The six most common inpatient approaches included pet therapy (51%), massage therapy (44%), music therapy (37%), guided imagery (29%), relaxation training (23%), and reiki and therapeutic touch (21%). These approaches were generally integrated into the course of care as an interdisciplinary service, with the provider collaborating with the patient's physician. In total, 85% of hospital respondents reported offering complementary or alternative therapies because of "patient demand," while only 70% offered these therapies because they were "clinically effective." While respondents noted that these programs tended to have low start-up costs, only 43% reported breaking even on those costs. Of those not breaking even, 68% had no expectations to break even. Often, these programs were not reimbursed by insurance and were not central to the mission of the hospital. However, these programs were considered a marketing opportunity.

Bitonte and De Santo (2014)<sup>34</sup> studied the prevalence of art therapy modalities offered within inpatient institutions in northeastern Ohio. The analysis showed that 20% of suburban (1 of 5) and 36% of urban (8 of 22) inpatient institutions provided at least one form of art therapy to patients. This finding is consistent with the Complementary and Alternative Medicine Survey of Hospitals. The authors included a survey question asking why art therapy was not used in the non-utilizing institutions. The findings were non-conclusive, but the researchers suggested that the lack of research in the field and lack of

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<sup>30</sup> Clarke, T.C., Black, L.I., Stussman, B.J., Barnes, P.M., Nahin, R.L. (2015). Trends in the Use of Complementary Health Approaches Among Adults: United States, 2002-2012. *National Health Statistics Reports*, 79: 1-9.

<sup>31</sup> Black, L.I., Clarke, T.C., Barnes, P.M., Stussman, B.J., Nahin, R.L. (2015). *Use of complementary health approaches among children aged 4-17 years in the United States: National Health Interview Survey, 2007-2012. National Health Statistics Reports*, 78: 1-18.

<sup>32</sup> U.S. Department of Health and Human Services, National Institute of Health, Use of Complementary Health Approaches in the U.S.: National Health Interview Survey: <https://nccih.nih.gov/research/statistics/NHIS/2012/key-findings>

<sup>33</sup> Samueli Institute (2011). 2010 complementary and alternative medicine survey of hospitals. [http://www.samueliinstitute.org/File%20Library/Our%20Research/OHE/CAM\\_Survey\\_2010\\_oct6.pdf](http://www.samueliinstitute.org/File%20Library/Our%20Research/OHE/CAM_Survey_2010_oct6.pdf).

<sup>34</sup> Bitonte, R.A., DeSanto, M. (2014). Art Therapy: An underutilized yet effective tool. *Mental Illness*, 6: 18-20.

specificity in approaches make it difficult to demonstrate the efficacy of art therapy, and this ultimately results in underutilization of these approaches.

***How are CATs used within clinical treatment teams?*** While there has been growth in the number of centers and hospitals providing integrative medicine, there are fewer studies regarding the actual practice of integrative medicine. The Bravewell Collaborative commissioned a study to survey 29 integrative medical centers to determine how integrative medicine is practiced.<sup>35</sup> While centers may use a variety of models of practice, 90% used the consultative care model, in which the physician and practitioners work in collaboration with patients' primary providers to provide integrative care. Collaboration occurs in team meetings, often on a weekly basis, with members of every discipline present. In the comprehensive care model, which is used in 62% of centers, an integrative practitioner manages care during the course of treatment for a very specific condition. The primary care model, used in 45% of centers, occurs when the primary care physician is also trained in integrative medicine and provides integrative care across a patient's lifespan. Across facilities, 52% offer inpatient services, and 86% were conducting research and engaged in provider education. Most centers (93%) make individualized care plans for their patients, and 90% incorporate family into patients' care.

Patient outcomes have been documented in several ways, but most frequently include physician observation notes (90%), patient comments (90%), patient satisfaction surveys (82%), assessment forms (59%), biomarkers (48%), and electronic medical record capture (48%). Patient satisfaction has been measured through center-specific surveys with quantitative questions (62%), Press Ganey Survey (41%), center-specific surveys with qualitative questions (34%), office comment cards (28%), and validated questionnaires (24%). While all centers measure satisfaction, with the exception of clinical trials, most centers do not capture patient outcomes data. The top conditions for which centers reported success included: pain (75%), gastrointestinal disorders (59%), depression/anxiety (55%), cancer (52%), and stress (52%).

During interviews, practitioners and researchers reported employing the consultative care model when utilizing CATs. Practitioners described attending weekly interdisciplinary treatment team meetings to report on their treatment plan, observations, and findings. These meetings help them to adapt treatment as needed, and they may co-facilitate treatment with other practitioners, such as speech language pathologists. While there may be specific treatment plans within the CATs, practitioners also agreed that the integrative medicine approach allowed for flexibility. Researchers and practitioners believe that using a combination of treatment approaches is imperative, and they agreed there were specific benefits of using CATs within an integrative care model. A researcher shared:

We see art-based therapy as a component of self-management and self-care, and we see that it has a great place to hold in an integrative care model. A lot of conditions that we work with include pain management, substance use management, and those conditions are multifaceted. We believe using a multimodal approach with a number of modalities is important and increases the impact of those approaches.

Relative to the military population, one person shared, "The integrative care model and the multimodal approach should be the way to go with veterans and activity duty military...There's a lot of

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<sup>35</sup> The Bravewell Collaborative (2012). Integrative medicine in America: How integrative medicine is being practiced in clinical centers across the United States. <http://www.bravewell.org/content/Downloads/IMinAm.pdf>.

comorbidities, so we should not expect that one modality is going to be the cure for all. We should be open to combining approaches.” Finally, several people shared that it is less stigmatizing using complementary approaches, such as CATs, compared to pharmacological treatment or working directly with a psychiatrist.

***Impact of CATs in integrative medicine: biological and psychological.*** Within integrative medicine, CATs have the potential to improve patient outcomes by addressing both biological and psychological symptoms. Through collaboration and an interdisciplinary approach, integrative therapies can work in tandem to help patients work through biological and psychological symptoms.<sup>36</sup> A review of the research shows that CATs, within integrative medicine, have been used with several different populations, including patients dealing with pain, cancer, palliative care, psychiatric issues, and geriatric issues, as well as military veterans with PTSD and TBI.<sup>37</sup> Collectively, these studies demonstrated the effectiveness of CATs in managing chronic pain, decreasing psychiatric symptoms, improving social functioning, improving mood, reducing fatigue, improving memory and concentration, improving emotional well-being, understanding and addressing the symptoms of TBI and PTSD, and improving spirituality. Psychiatric patients with a history of trauma demonstrated greater improvement of symptoms than psychiatric patients without a history of trauma, which provides support that CATs are appropriate for a variety of populations in which trauma be an underlying factor.<sup>38</sup>

These studies demonstrate the benefits of using CATs within integrative medicine. However, the research is greatly limited, with most of the findings at a low to moderate effect size.<sup>39</sup> While these studies describe how CATs are used, fewer describe the relationship between the different treatment modalities. During interviews, researchers noted that practitioners need to be pro-active in raising awareness about their treatment approach and the relationship to other treatments. Other recommendations include examining CAT dosage effects, isolating the impact of the treatment, and utilizing randomization among the different treatment approaches.

***Economic impact of CATs.*** The findings from these studies suggest there is demand for and interest in the use of CATs, and an increasing number of hospitals offer these therapies through outpatient clinics and inpatient, integrative teams.<sup>40</sup> Insurance companies rarely cover the full cost of these therapies, and patients often pay out-of-pocket for a portion of the expenses. Results of the 2010 Complementary and Alternative Medicine Survey of Hospitals showed that fewer than 50% of hospitals report breaking even

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<sup>36</sup> Walker, et al (2017).

<sup>37</sup> Crawford, C., Lee, C., Bingham, J. (2014). Sensory art therapies for the self-management of chronic pain. *Pain Medicine*, 15: S66-S75.; Bao, Y., Kong, X., Yang, L., Liu, R., Shi, Z. Li, W., Hua, B., Hou, W. (2014). Complementary and Alternative Medicine for Cancer Pain: An Overview of Systematic Reviews. *Evidence-based Complementary & Alternative Medicine*, 2014: 1-9.; Korlin, D., Nyback, H., Goldber, F. (2000). Creative arts groups in psychiatric care: Development and evaluation of therapeutic alternative. *Nordic Journal of Psychiatry*, 54(5): 333-340.; Beauchet, O., Remondiere, S., Mahe, M., Repussard, F., Decavel, F., Annwelier, C. (2012). Geriatric inclusive art and length of stay in acute care unit: A case-control pilot study. *Journal of the American Geriatrics Society*, 60(8): 1585-1587.; Walker, et al, (2017); O’Kelly, J., Koffman, J. (2007), Multidisciplinary perspectives of music therapy in adult palliative care. *Palliative Medicine*, 21: 235-241.

<sup>38</sup> Korlin, et al (2000).

<sup>39</sup> Crawford, et al (2014); Bao, et al (2014).

<sup>40</sup> U.S. Department of Health and Human Services, National Institute of Health, Use of Complementary Health Approaches in the U.S.: National Health Interview Survey; Samueli Institute (2011).



when implementing complementary health care approaches. These results suggest a need to study the economic impact of CATs.

There is increasing evidence that CATs have an important contribution to health and wellbeing. During interviews, researchers acknowledged the potential for CATs interventions to be cost-effective, and they shared examples of how CATs could reduce the cost of end-of-life care, psychiatric treatment, and pharmacological treatment. They indicated that, because patients are engaged in their treatment plan, they may be more compliant with their medical care and require less costly procedures. Further, there is evidence that CATs can reduce the length of hospital stays, which ultimately reduces health care costs.<sup>41</sup> Other researchers suggest CATs are cost effective because of the low cost of implementing the therapy with recognized benefits.<sup>42</sup> One study showed that a 12-week intensive, interdisciplinary approach that included art therapy was cost effective because 98% of patients were compliant with the program, with patients reporting fewer symptoms, missing fewer days of work, and improving quality of life one year after starting treatment.<sup>43</sup>

Relatively few studies, however, have demonstrated the cost-effectiveness of CATs. Uttley, et al (2015) reviewed 11 randomized controlled trials to determine the cost effectiveness of group art therapy for people with non-psychotic disorders based upon the economic evaluation of quality-adjusted life year.<sup>44</sup> The review showed that art therapy was associated with positive changes in 7 of the 11 studies. The authors found that art therapy, compared with wait-list controls, had a mean cost per quality-adjusted life year below £6000 with a 100% probability of being cost effective at a willingness to pay £20,000. It was noted that this finding should be interpreted cautiously given the heterogeneity in the groups studied, small sample sizes, and low-quality studies.

In a comprehensive report, the All-Party Parliamentary Group on Arts, Health, and Wellbeing (in the United Kingdom) reviewed a series of studies to demonstrate how the arts aid in recovery and quality of life, assist individuals in facing challenges such as aging and long-term medical conditions, and can save money in health and social care.<sup>45</sup> The authors also show a strong relationship between social deprivation and the need for medical care, suggesting that the arts serve a need in negating medical costs. Some studies demonstrate specific cost savings. For example, Core Arts, which promotes mental health through the arts for Black, Asian, and minority ethnic males, estimated in a cost effectiveness study that participation in the program avoided hospital admission costs of £2.58 for every £1 invested.<sup>46</sup>

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<sup>41</sup> Beauchet, et al (2017).

<sup>42</sup> Meshberg-Cohen, S., Svikis, D., McMahon, T.J. (2014). Expressive writing as a therapeutic process for drug-dependent women. *Substance Abuse*, 35: 80-88.

<sup>43</sup> Kroese, M. Schulpen, G., Bessems, M., Nijhuis, F., Severens, J. (2009). The feasibility and efficacy of multidisciplinary intervention with aftercare meetings for fibromyalgia. *Clinical Rheumatology*, 28(8): 923-929.

<sup>44</sup> Uttley, L, Stevenson, M., Scope, A., Rawdin, A., Sutton, A. (2015). The clinical and cost effectiveness of group art therapy for people with non-psychotic mental health disorders: As systemic review and cost effectiveness analysis. *BMC Psychiatry*, 15(1): 1 – 13.

<sup>45</sup> All-Party Parliamentary Group on Arts, Health, and Wellbeing. (2017). *Creative health: The arts for health and wellbeing*. London: All-Party Parliamentary Group on Arts, Health, and Wellbeing.

<sup>46</sup> Core Arts. (2016). *Arts in health: End of Q4 results*. London: Core Arts.

A cost-benefit analysis of Airlift, a program designed to address mental and physical health issues, which includes an eight-week course of two hours per week led by a professional artist in poetry, ceramics, drawing, mosaic or painting, demonstrated a cost savings of £216 per patient.<sup>47</sup> Specifically, in the year prior to Airlift and the year after, general practitioner consultations decreased by 37% and hospitalizations decreased by 27%. The authors conclude that the arts contribute to a healthy society, and they made recommendations to expand opportunities in the arts, to increase collaboration between health service providers and art practitioners, and to improve research to demonstrate the long-term evidence of the arts.

During a Creative Forces clinical research convening in June 2017, experts identified the need to understand the economic impacts of CATs through a cost-benefit analysis. The experts identified several areas for potential economic impacts, including reduced hospital stays, fewer emergency room visits, reduced medical costs, increased patient engagement with other therapies, increased capacity to work, and improved quality of life.

### SECTION 3: CATS IN THE CREATIVE FORCES PROGRAM

The Creative Forces: NEA Military Healing Arts Network utilizes CATs with service members, veterans, and families coping with TBI, PTSD, and related concerns. Currently, these interventions include art, music, and dance/movement therapies and therapeutic/expressive writing in clinical settings and as a component of interdisciplinary interventions. At NICoE, active duty service members participate in a four-week interdisciplinary, outpatient treatment program with 17 conventional and integrative treatment disciplines. The members of the provider team reflect the interdisciplinary nature of the program: it includes, for example, an internist, neurologist, psychiatrist, neuropsychologist, creative arts therapists (art, music, dance/movement), family therapist, wellness provider, physical therapist, speech language pathologist, audiologist, optometrist, and a nurse specialist. Patients participate six to seven hours a day, Monday through Friday, over the four weeks.

The Creative Forces program is developing research methodologies and tools, and studies from the program are already emerging. A Creative Forces evaluation toolkit is under development for use in future program evaluation and in research. Research conducted on CATs through Creative Forces has included individual and collective case studies, thematic analyses of participants' art, evaluation of CAT intervention models, comparisons of outcomes with analyses of case notes, and comparisons of methods of analysis. See Appendix C for an inventory of Creative Forces research to date.

In the art therapy component of the program, participants create masks representing aspects of their identity and/or experiences in a safe, nonjudgmental, group therapy context. A thematic analysis of the masks of 370 participants,<sup>48</sup> based on images of the artwork and on clinical notes, revealed a pattern of representations of the self: as an individual, in relationships, in communities, as representing value systems, and over time. Across patients' masks, several themes emerged: physical injuries; psychological injuries and challenges; military and community identity; cultural metaphors and existential reflections; reflections on life story, questions, and transitions; and conflicted/split sense of self. The authors

<sup>47</sup> Opher, S. (2011). *Cost-benefit evaluation of Airlift 2009-2012: Summary*. Gloucester: Cloucestershire County Council and NHS Cloucestershire.

<sup>48</sup> Walker, et al (2017).



observe that the findings provide insights into the experiences and struggles of active duty service members dealing with PTSD, TBI, and co-occurring mood disorders, and these insights can be used within integrative care. Other research currently in progress includes a systematic examination of associations between visual self-expression and standardized clinical self-report measures (manuscript in development).

A case study from the same program followed a senior active-duty service member with TBI and PTSD through his visual art therapy over the four-week program.<sup>49</sup> The case demonstrates the integration of art therapy with other therapies and the potential for synergistic effects. It also demonstrates the use of art therapy for nonverbal expression for individuals with PTSD and TBI and as a means of engaging patients who may be resistant to care.

In a study of therapeutic/expressive writing with service members at NICoE (manuscript in development), service members reported more positive than negative, neutral, or mixed emotions during and after their therapeutic writing. In content analyses of the participants' texts, the most prominent themes were the social and work categories. The study also compared the content analyses that were conducted by a clinician with analyses conducted by a software program. The researchers reported software analyses took much less time but "did not produce results of comparable richness or nuance." However, there may be specific roles for each approach.

Program evaluation of individual and group music therapy used service member surveys, clinical notes, and songs written by participants. Results showed that 79% of service members who participated in one music therapy session requested follow-up: 38% requested individual sessions; 30% requested group sessions; and 35% requested both individual and group follow-up music therapy sessions. Results also showed that service members valued the opportunity to engage with music (e.g. play instruments, sing). During sessions, they explored and expressed emotions, worked on attention skills, and deepened their awareness of physiological changes. They showed improvements in gross and fine motor coordination, attention to task, insights into life issues, and increased relaxation, confidence, and autonomy. Family music therapy sessions with spouses and/or children were characterized by improvements in communication, teamwork, and bonding. Songs written by service members showed themes of resilience, hope, anger, frustration, and love, among others. An unpublished case study from the program provides an accounting of interdisciplinary work among music therapy, speech language pathology, occupational therapy, and physical therapy for a service member with TBI.

## SECTION 4: CATS IN RELATED PATIENT POPULATIONS

CATs have been used with military populations and other populations to treat PTSD, TBI, and related mental and medical health issues.<sup>50</sup> However, the evidence linking CATs directly to biological, psychosocial, and economic outcomes is more limited because of differences in CAT models, treatment

<sup>49</sup> Walker, M.S., Kaimal, G., Gonzaga, A.M.L., Koffman, R., and DeGraba, T. (2016). Art therapy for PTSD and TBI: A senior active-duty military service members' therapeutic journey. *The Arts in Psychotherapy*, 49: 10-18.

<sup>50</sup> Ramirez, J. (2016). A review of art therapy among military service members and veterans with Post-Traumatic Stress Disorder. *Journal of Military & Veterans' Health*, 24(2), p. 40-51; Walker, M.S., Kaimal, G., Koffman, R., DeGraba, T.J. (2016). Art therapy for PTSD and TBI: A senior active military service member's therapeutic journey. *The Arts in Psychotherapy*, 49, 18-19.

protocols, and research methodologies. The sections below provide overviews of CAT outcomes with other military personnel and their families, as well as other PTSD and TBI populations.

### **CAT Outcomes in Military Personnel**

Military personnel, particularly those exposed to combat, are at risk for experiencing trauma and/or acquired brain injury. Exposure to combat may result in symptoms of PTSD including flashbacks, nightmares, mood disorders, suicidal ideation, sleeplessness, cognitive difficulties, and chronic pain. Service members and veterans may experience emotional numbness, may have difficulties verbalizing their experiences or their symptoms, and may have difficulties with relationships, work, and activities of daily life. Repeated deployments may also interfere with relationships. Military personnel are often trained to be vigilant, as well as sensitive to changes in the environment that may pose threats. This vigilance often persists beyond the combat setting, leading to chronic arousal and reactivity. Behaviors or reactions that can be lifesaving in the context of war may be disruptive for individuals outside combat settings.<sup>51</sup>

As observed by many authors, there are long-standing relationships between war and the artistic expression of service members and veterans. Military personnel across cultures and across time have expressed their experiences of war through arts such as drawing, music, and poetry. This suggests that CATs may be uniquely suited for meeting the therapeutic needs of service members and veterans. Currently, creative arts therapists provide services for military personnel in a number of inpatient and outpatient military treatment facilities and Veterans Administration programs across the country. They also serve military-connected personnel through clinics, community mental health settings, and independent practice. Clinical practices of CATs for treating service members and veterans vary, depending upon the arts discipline, the theoretical approach of the therapist, and the patient's symptoms. CATs may occur as stand-alone treatments, as an option in a treatment array, or as an integrated component of a comprehensive treatment approach as with Creative Forces.<sup>52</sup>

CATs have been employed to address the symptoms and underlying causes of PTSD, TBI, and related concerns for service members, veterans, and their families. Intervention models and treatment protocols, including dose and duration of interventions, vary across and within CAT disciplines. For example, treatment models may focus on stress management, self-regulation and reduction of hyperarousal, self-integration and mastery of trauma, externalization of a personal narrative of the experienced trauma, mindfulness, resilience, and/or integration of memories. Therapies may also address cognitive functioning, physical abilities, and sensorimotor integration.<sup>53</sup> By reducing arousal and increasing self-management of emotion and stress, CAT interventions may make it possible for patients to participate in other essential treatments for their well-being. Thus, CATs may be of particular importance when a patient's PTSD or TBI symptoms are a barrier to accessing all forms of treatment.

Reported outcomes from CATs with service members and veterans include improvements in cognitive function, such as increased concentration, attention, memory, organization, as well as reductions in

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<sup>51</sup> Ibid.

<sup>52</sup> Malchiodi (2012). Art therapy with combat veterans and military personnel.

<sup>53</sup> Malchiodi (2012). Art therapy with combat veterans and military personnel; Collie, K., Backos, A., Malchiodi, C.A., and Spiegel, D. (2006). Art therapy for combat-related PTSD: Recommendations for research and practice. *Art Therapy: Journal of the American Art Therapy Association*, 23(4): 157-164.

nightmares and arousal. Increases in positive emotion, emotional self-efficacy, and self-esteem, and improvements in social relationships have been identified.<sup>54</sup> CATs with families of service members and veterans have provided avenues for dealing with fears, stress, and disrupted relationships.

Patients also report the ability to express thoughts they could not previously verbalize, enhanced trauma recall, and reductions, arousal, and avoidance behaviors.<sup>55</sup> Improvements in veterans' ability to process trauma was found in a randomized controlled trial that sought to determine if art therapy in conjunction with Cognitive Processing Therapy (CPT) was more effective for reducing symptoms of combat-related PTSD than CPT alone. Veterans ( $N = 11$ ) received either individual CPT or individual CPT in conjunction with individual art therapy. Although there were no significant differences between groups in improvement on the PTSD Checklist–Military Version and Beck Depression Inventory–II, art therapy in conjunction with CPT was found to improve trauma processing for veterans. Veterans also reported art therapy to be an important part of their treatment as it provided enhanced trauma recall and increased access to emotions.<sup>56</sup>

Observations in the research literature and from the field experts interviewed for this project noted the potential for CATs to draw veterans into treatment when they might otherwise not engage. Research has shown that individuals with PTSD may restrict their activities outside the home and, in particular, may be reluctant to enter situations with triggers for PTSD symptoms, including treatment settings. In describing a CAT program currently serving veterans, one interviewee noted that participants drive considerable distances on a weekly basis to participate in the therapy and, for some, it is the only time they leave their home during the week. Others observe that CATs present an opportunity for personal engagement and expression, for learning and doing, and for mastery.

Research on the use of CATs to treat PTSD and TBI has existed for several decades, primarily for art therapy and music therapy. However, it is difficult to draw firm conclusions about the impact of CATs in treating TBI, PTSD, and co-occurring conditions for service members and veterans based on current published literature, given the variability in CAT models, treatment protocols, and research methodologies. The published research includes case studies, observations of outcomes, and suggested models of clinical practice, but few controlled studies. Further, as many authors note, much of the research has been conducted with veterans rather than with active-duty service members. Study groups are often small and based on samples of convenience, limiting generalizability.

Along with these findings, the significant differences among CATs and the implications for research must be considered. CATs draw from different theoretical and practice models. They operate in different modalities. Some CAT interventions occur in groups and rely heavily on psychosocial factors, whereas others engage only the individual. For research purposes, it may not be possible or effective to consider CATs as a monolithic treatment approach with common outcomes. However, research into common factors among CATs and into their processes for producing change may establish fundamental and shared mechanisms and outcomes.

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<sup>54</sup> Collie, et al (2006); Walker, et al (2016); Ramirez (2016).

<sup>55</sup> Campbell, M., Decker, K., Kruk, K., Deaver, S. (2016). Art therapy and cognitive processing therapy for combat-related PTSD: A randomized controlled trial. *Art Therapy*, 33(4); Collie, et al (2006); Walker, et al (2016); Ramirez (2016).

<sup>56</sup> Campbell, et al (2016).

Field experts interviewed through this project and authors of published research reinforce the need for effective collaboration in the pursuit of high quality of research. For example, Stuckey and Nobel (2010) observed: “Traditionally, scientists involved with statistics have not partnered with those in the arts community, but in future studies, teams with solid research methodology experts (i.e. biostatisticians), clinical experts, and those with artistic expertise in the community should be created to form an effect of triad of experts.”

Finally, studies of CATs in relation to TBI and PTSD have the potential to contribute to the understanding of neurological and biological bases of both, as well as the mechanisms by which CATs exert their effects.

***CATs with families of military personnel.*** The research highlights difficulties families may have with deployment and transition from deployment.<sup>58</sup> Furthermore, there have been efforts in utilizing CATs with family members and children of military personnel;<sup>59</sup> however, there is very little research on these efforts.

While war veterans may struggle with issues related to PTSD and TBI, they also may struggle to integrate back with their family and in assuming parenting functions after deployment. This may be more difficult if they suffer from PTSD or TBI. Family members, as well, may struggle with the realities of deployment. An interviewee observed, “A person with PTSD, pain, or TBI, or all three, is not the only person affected by their condition. It’s going to be the family, too.” Some research suggests that an integrative approach using CATs helps military personnel deal with daily stressors and family problems. Gajic (2016) presents a case study demonstrating how art therapy helped address a war veteran’s PTSD symptoms and also helped him integrate into his family and assume a parenting role with his three-year old son.<sup>60</sup> Qualitative analysis of the drawing content showed a shift from war-related content to current family life.

During interviews, researchers and practitioners also shared how CATs can be used with family members, and the importance of addressing the family as a whole. One shared, “It all comes back to if people are having problems dealing with upheavals in their lives and they're not able to talk about them. This is where [CATs] can be beneficial, and it often happens in family situations.” CATs provide a context and catalyst to address the stresses in the lives of family members, related to military service.

CAT practitioners also noted a unique benefit of CATs as compared to other forms of psychotherapy: the ability for clients and their families to use many of the techniques, such as drawing or writing, outside the therapeutic milieu. In fact, therapists described working with family members to teach them some of the techniques, which they can use independently.

CATs may be particularly beneficial to younger family members who may not yet have the verbal capacity to communicate their feelings and experiences. CAT strategies can also provide equal voice to

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<sup>58</sup> Chandra, A., Lara-Cinisomo, S., Jaycox, L.H., Tanielian, T., Burns, R.M., Ruder, T., Bing, H. (2010). Children on the homefront: The experience of children from military families. *Pediatrics*, 125(1): 16-25.

<sup>59</sup> For example <http://www.nwherald.com/2011/07/23/art-therapy-an-outlet-for-military-children/arr8gr5/>

<sup>60</sup> Gajic, G.M. (2016). Bridging psychological barriers between the child and the father after his returning from the war – Could group art therapy help? *Vojnosanit Pregl*, 73(7): 686-689.

all family members.<sup>61</sup> Children from military families have several stressors they deal with around deployment and multiple moves. Chandra et. al. (2010) identified issues that youth, ages 11-17, and their non-deployed caregivers (n = 1507) experience, including more emotional difficulties and more school, family, and peer related difficulties compared to a national sample.<sup>62</sup> These issues were more apparent during deployment and reintegration. To address these concerns, Kim et. al. (2011) describe an approach of using CATs with middle school students from military families. While the results were not evaluated, there are implications for further research in this area.<sup>63</sup>

### CAT Outcomes in Other PTSD Populations

Exposure to trauma can result in a constellation of acute and/or chronic psychological and physiological symptoms. Post-Traumatic Stress Disorder, as defined by the American Psychiatric Association, results from exposure to a traumatic event or violence which is then persistently re-experienced and leads to: efforts to avoid trauma-related stimuli after the trauma; negative thoughts or feelings that began or worsened after the trauma; and trauma-related arousal and reactivity that began or worsened after the trauma.<sup>64</sup> Appendix B details information on diagnostic criteria. The National Institute of Mental Health indicated that the 12-month prevalence of PTSD is 3.5% of the U.S. adult population.<sup>65</sup> Of these cases, 36.6% are classified as severe.

There are a number of comorbid physical and psychological conditions associated with PTSD such as depression, substance abuse, other anxiety disorders, neurological symptoms, and sleep disorders. Key neural systems associated with PTSD include the limbic system, the sympathetic nervous system, and neural language centers,<sup>66</sup> although more recent research has addressed the complexities of neural systems as they relate to experience.<sup>67</sup> PTSD sufferers may experience significant, even devastating, disruptions to their lives including unemployment, homelessness, social isolation, divorce, and incarceration, and there are significant risk factors for suicide.<sup>68</sup>

Since the 1970s, CAT interventions have been used in treating trauma, including trauma resulting from sexual violence, domestic violence, war, and terrorism.<sup>69</sup> CATs for trauma have been successful in reducing key physical and experiential symptoms of trauma and in improving patients' self-management of symptoms. Explanations of the underlying CAT mechanisms associated with positive outcomes in

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<sup>61</sup> Riley, S., and Malchiodo, C.A., (2012). Solution-focused and narrative approaches. In C.A. Malchiodi (Ed.), *Handbook of art therapy*. New York: Guilford Press.

<sup>62</sup> Chandra, et al (2010).

<sup>63</sup> Kim, J.B., Kirchoff, M. Whitsett, S. (2011). Expressive arts group therapy with middle-school aged children from military families. *Arts in Psychotherapy*, 28(5): 356-362.

<sup>64</sup> American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). Washington, DC: American Psychiatric Association.

<sup>65</sup> National Institute of Mental Health: Post Traumatic Stress Disorder Among Adults.

<https://www.nimh.nih.gov/health/statistics/prevalence/post-traumatic-stress-disorder-among-adults.shtml>.

<sup>66</sup> Lobban, J. (2014). The invisible wound: Veterans' art therapy. *International Journal of Art Therapy*, 19(1): 3-18.; Ramirez (2016).

<sup>67</sup> van der Kolk, B. (2006). Clinical implications of neuroscience research in PTSD. *Annals of the New York Academy of Sciences*, 1071(4): 277-293.

<sup>68</sup> Ramirez (2016).

<sup>69</sup> Collie, et al (2006).

treatment of PTSD vary according to the theoretical bases ascribed to the therapies. Among the suggested therapeutic mechanisms are the following.<sup>70</sup>

- Reconsolidation of memories associated with the trauma
- Progressive exposure to address avoidance behaviors
- Externalization and emotional distance from the event
- Reduction of arousal
- Reduction of vigilance
- Reactivation of positive emotions
- Enhancement of emotional self-efficacy
- Improved self esteem
- Haptic perception and sensorimotor processes
- Group/psychosocial processes
- Perceptions of mastery and accomplishment
- Meaning-making and discovery
- Physiological self-regulation
- Nonverbal access to trauma (important for PTSD and TBI which can disrupt verbal abilities)

CATs have been used with many different PTSD populations. An analysis of peer-reviewed studies identified three primary PTSD populations: war/combat related, sexual/physical abuse survivors, and refugees.<sup>71</sup> Other populations also show up in the literature: for example, firefighters<sup>72</sup> and persons exposed to terror events,<sup>73</sup> among others.

Van Lith analyzed peer-reviewed articles from 1995 to 2014 to examine art therapy approaches for people with mental health issues and to determine how the approaches aided in the improvement of symptoms, relapse prevention, and functioning.<sup>74</sup> The researcher initially selected 33 articles related to PTSD, of which 11 met full criteria for the study. To meet the criteria, the studies must have recruited adults with a formal diagnosis, and the researchers must have identified and explained the art therapy treatment, and have explained the research methods. The author noted that 7 of the 11 studies explored a specific art therapy approach and provided clinical implications. Two articles addressed PTSD using a specifically designed approach and studied outcomes for that approach. Finally, two studies, one of which used randomized controls, addressed the symptoms of combat-related PTSD through art therapy and the relative outcomes. The author noted that the analysis revealed some limitations in the research. For example, art therapists tended to tailor the art therapy approach to the client and the situation, without clearly explaining how the approach was applied. Furthermore, most of the studies had very small sample sizes and utilized a variety of research methods.

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<sup>70</sup> Collie, et al (2006); Elbrecht, C. and Antcliff, L.R. (2014). Being touched through touch. Trauma treatment through haptic perception at the Clay Field: A sensorimotor art therapy. *International Journal of Art Therapy*, 19 (1): 19–30.; Smith (2016).

<sup>71</sup> Van Lith, T. (2016). Art Therapy in mental health: A systematic review of approaches and practices. *Arts in Psychotherapy*, 47: 9-22.

<sup>72</sup> Shim, G.S., Kim, N.S., Bang, S.H. (2015) Effects of short-term music therapy in fire fighters with post-traumatic stress risk. *Journal of the Korea Academia-Industrial Cooperation Society*, 16(6): 4040-4047.

<sup>73</sup> Hass-Cohen, N., Clyde-Findlay, J., Carr, R., Vanderlan, J. (2014). Check, change what you need to change and/or keep what you want: An art therapy neurobiological-based trauma protocol. *Art Therapy*, 31(2): 69-78.

<sup>74</sup> Van Lith (2016).



Although there are limitations in the research, CATs have generated some positive outcomes, particularly in psychosocial realms. For example, Hass-Cohen, et. al. (2014) assessed the “Check, Change What You Need to Change and/or Keep What You Want” art therapy protocol with a client who experienced PTSD after witnessing the attacks on the World Trade Center.<sup>75</sup> A comparison of results on the Beck Anxiety Index and the Centrality Event Scale before and after the intervention showed improvements. Kopyton and Lebedev (2013) conducted a randomized control study assigning Russian war veterans to an art therapy experimental group or a control group.<sup>76</sup>

The treatment group participated in 2.5 hours of art therapy three times per week for a month. After art therapy, the experimental group showed greater improvements, relative to controls, in their symptom status, personality functioning, cognitive abilities and creativity, and quality of life. Brillantes-Evangelist (2013) utilized a mixed-methods, quasi-experimental design study to investigate the effectiveness of visual arts and poetry therapy in alleviating symptoms of depression and PTSD among adolescents with a history of physical and sexual abuse.<sup>77</sup> Two intervention groups (visual arts and poetry) and a control group (no treatment) completed pre- and post-tests of the Self Rating Depression Scale and Child Report on Posttraumatic Symptoms. The results showed PTSD symptoms decreased for the Visual Arts Group, and depression symptoms decreased for the poetry group. On the other hand, symptoms were exacerbated for the control group.

To investigate the effectiveness of music therapy on PTSD, researchers conducted a randomized controlled trial with individuals who had not responded to cognitive behavioral therapy.<sup>78</sup> Patients were assigned to a treatment (n=9) or control group (n=8). The treatment group received 10 weeks of music therapy, and the control group had the opportunity to participate after the study. Symptoms were assessed using the Impact of Events Scale-Revised and Beck Depression Inventory II at the beginning and end of treatment. The treatment group experienced a significant reduction in PTSD symptoms and a marginally significant reduction of depression symptoms. Limitations to the study included the small sample size and the fact that researchers were not blind to subjects’ group assignment.

Collectively, this sample of studies shows promise in the use of CATs for promoting positive outcomes. However, many studies did not adequately describe the CAT approach or research methodology and had limited sample sizes, and few studies utilized randomized control groups. Additional research using rigorous methods is necessary to advance the CAT fields.

### **CAT Outcomes in Other TBI Populations**

CATs have been used to treat TBI for a variety of populations, including children, adolescents, and adults. According to the Centers for Disease Control and Prevention, in 2013, there were approximately

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<sup>75</sup> Hass-Cohen, et al (2014).

<sup>76</sup> Kopytin, A., Lebedev, A. (2013). Humor, self-attitude, emotions, and cognitions in group art therapy with war veterans. *Art Therapy*, 30(1): 20-29.

<sup>77</sup> Brillantes-Evangelista, G. (2013). An evaluation of visual arts and poetry as therapeutic interventions with abused adolescents. *Arts in Psychotherapy*, 20(1): 71-84.

<sup>78</sup> Carr, C., d’Ardenne, P., Sloboda, A., Scott, C., Wang, D., Priebe, S. (2012). Group music therapy for patients with persistent post-traumatic stress disorder – an exploratory randomized controlled trial with mixed methods evaluation. *Psychology & Psychotherapy: Theory, Research & Practice*, 85(2): 179-202.

2.8 million TBI-related emergency department visits, hospitalizations, and deaths in the United States.<sup>79</sup> The effects of TBI include impaired thinking, memory, movement, sensation (e.g. vision or hearing), or emotional functioning (e.g. personality changes, depression).

Interest in the use of CATs with TBI has emerged through the avenues of neurology and neuropsychology<sup>80</sup> and often in conjunction with another presenting condition such as PTSD. However, TBI may have cognitive and emotional symptoms associated with specific brain regions and may be accompanied by alterations in physical functioning (e.g. lateralized loss of movement). Because of the limitations in functioning associated with TBI, CATs may directly address physical challenges, as well as cognitive function including verbal and nonverbal expression, memory, concentration, attention, and organization. Self-regulation of affect and behavior, as well as compensatory strategies for dealing with the deficits may be targeted through CAT interventions.<sup>81</sup>

Researchers have advocated for the use of CATs with TBI because of the flexibility of treatment in working with clients; because it helps with the mental, emotional, spiritual, and physical healing; and because it can serve as a non-verbal structure to understand a client.<sup>82</sup> A number of studies have explored the role of CATs with the TBI population<sup>83</sup> and/or how the arts engage different neural mechanisms of the brain, particularly in music therapy.<sup>84</sup> However, the research showing direct outcomes of CATs with TBI is less extensive. The studies below represent a sample of the available research, as well as some of the research limitations.

Researchers conducted a review of the literature to identify the effectiveness of expressive art interventions for social and community integration with acquired brain injuries.<sup>85</sup> Originally 55 articles were identified for inclusion in the study; however, 28 were eliminated because they did not adequately describe the intervention. Little information was provided on why other studies were eliminated. In total, 10 studies were included in the review. The studies included quantitative and qualitative approaches and consisted of one randomized controlled trial, one controlled trial, three uncontrolled experimental studies, two case studies, one methodological theory study, and two descriptive studies. The results demonstrated positive effects in psychological health, emotional intelligence, cognitive function, and social integration. The authors acknowledged the studies provided low levels of scientific evidence: they used anecdotal evidence to support the findings, failed to adequately report the experimental procedures used in data collection and analysis, and few used standardized measures to support outcomes.

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<sup>79</sup> Centers for Disease Control and Prevention: Traumatic Brain Injury & Concussion. [https://www.cdc.gov/traumaticbraininjury/get\\_the\\_facts.html](https://www.cdc.gov/traumaticbraininjury/get_the_facts.html).

<sup>80</sup> Garner, R. L. (1996). The NAT model: factors in neuropsychological art therapy. *American Journal of Art Therapy*, 34: 107-111.

<sup>81</sup> Kline, T. (2016). Art therapy for individuals with traumatic brain injury: A comprehensive neurorehabilitation-informed approach to treatment. *Art Therapy: Journal of the American Art Therapy Association*, 33(2): 67-73.

<sup>82</sup> Ibid.

<sup>83</sup> Ibid.

<sup>84</sup> Ibid.

<sup>85</sup> Goyal, A., Keightley, M.L. (2008). Expressive art for the social and community integration of adolescents with acquired brain injuries: a systematic review. *Research in Drama Education*, 13(3): 337-352.



Another study<sup>86</sup> examined the effects of neurologic music therapy on cognitive functioning and emotional adjustment, using a pre-test, post-test quasi-experimental design. The treatment group (n=31) took a pre-test, participated in four 30-minute sessions focused on attention, memory, executive function, and emotional adjustment, then took a post-test. The control group (n=23) took a pre-test, rested for 30-minutes, then took a post-test. Attention was assessed using the Digit Span subtest of the Wechsler Adult Intelligence Scale-III, memory was assessed using Auditory Verbal Learning Tests, executive functioning was assessed using the Trail Making Test-Part B, and emotional adjustment was assessed using the Global Severity Index from the Brief-Symptom Inventory-18 and the Multiple Affect Adjective Check List. The treatment group showed improvements in executive function and overall adjustment with lessening of depression, sensation seeking, and anxiety. Control participants improved in emotional adjustment and lessening of hostility, but showed decreases in measures of memory, positive affect, and sensation seeking. Neither group demonstrated changes in memory or attention. Limitations to the study include small sample size, lack of randomization of groups, and the limited length of treatment.

Yet another study examined the feasibility and effectiveness of arts-based interventions for youth with acquired brain injuries to facilitate social skills and participation.<sup>87</sup> The case studies involved four participants and one control. Data were collected four and one week prior to intervention, and one week and between six to eight months post-intervention. The experimental intervention was participation in an intensive theatre skills training program, which occurred daily for four hours over a four-week period. Outcomes were measured through the Canadian Occupational Performance Measure, Goal Attainment Scaling, Child and Adolescent Scale of Participation, Rosenberg Self-Esteem Scale, and Profile of Pragmatic Impairments in Communication. Overall, treatment participants demonstrated positive changes in social skills and leisure goals. This improvement was not demonstrated for the control participant. Limitations of the study include small sample sizes and the use of self-report data.

## SECTION 5: IMPLICATIONS FOR CATs IN APPLIED RESEARCH SETTINGS

To date, much of the research on the implementation and impact of CATs has been discipline-specific. It is important to understand the implications of the differences in CAT disciplines for implementation of clinical practice and, consequently, for research. Sound research is theory-driven: theories drive research hypotheses, methodology, selection of metrics, and interpretation of results. If CATs are considered in the aggregate, it will be important to determine the extent to which they share a common theoretical base that can guide aggregated research.

In their review of CATs and health care, Stuckey and Nobel (2010) reported that much of the published work on CATs is “theoretical in nature” (p. 255), with little discussion of specific outcomes. Studies tended to focus on short treatments and short-term outcomes. They further noted that systematic and controlled studies have only recently emerged, and they suggest that: “legitimate research questions include whether certain art-based therapies are more effective than others, whether the impact of therapy can be tied to other important variables and preconditions, and whether health benefits are sustained or short term” (pp.254-255).

<sup>86</sup> Thaut, et al (2009).

<sup>87</sup> Agnihotri, S., Gray, J., Colantonio, A., Polatajko, H., Cameron, D., Wiseman-Hakes, C., Rumney, P., Keightley, M. (2014). Arts-based social skills interventions for adolescents with acquired brain injuries: Five case reports. *Developmental Neurorehabilitation*, 17(1): 44-63.

Interview participants noted the field of CATs and applied research is very large. There are many different forms of CATs, approaches to implementing the therapy, focus populations, and expected outcomes. This dynamic ultimately requires that researchers develop clear hypotheses that consider the underlying mechanisms of the CAT, which then drives the selection of tools and metrics and the research methodologies. An interview participant said,

I think it is really important that we have a good understanding of the potential mechanisms by which art-based therapies are exerting their effects, because that is not only grounded information for the research but will also help provide a framework for the development of interventions, and logic in interventions. Having a theoretical grounding would actually help the researchers and the therapists to tailor the intervention to the appropriate condition that they are researching.

Because of this need, some studies are descriptive in nature, focused on describing CAT practices, while others focus on clinical outcomes. A researcher suggested that these studies can occur in parallel if there are also efforts to understand the underlying mechanisms and to develop research around specific hypotheses.

### Research Priorities within the CAT Disciplines

**Art therapy research.** The American Art Therapy Association has identified the following research priorities<sup>88</sup> based on a study conducted with art therapy researchers.<sup>89</sup>

Focus research efforts in the following areas:

- Outcome/efficacy research
- Art therapy and neuroscience
- Research on the processes and mechanisms in art therapy
- Art therapy assessment validity and reliability
- Cross-cultural/multicultural approaches to art therapy assessment and practice
- Establishment of a database of normative artwork across the lifespan

Seek to address the following research questions:

- What interventions produce specific outcomes with particular populations or specific disorders?
- How does art therapy compare to other therapeutic disciplines that do not include art practice in terms of various outcomes?
- How reliable and valid is any art therapy assessment?
- What neurobiological processes are involved in art making during art therapy?
- To what extent do a person's verbal associations to artwork created in art therapy enhance, support, or contradict?
- What are ways of making art therapy more effective for clients of different ethnic and racial backgrounds?

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<sup>88</sup> <https://arttherapy.org/research/>

<sup>89</sup> Kaiser, D. and Deaver, S. (2013). Establishing a research agenda for art therapy: A Delphi Study. *Art Therapy: Journal of the American Art Therapy Association*, 30(3): 114-121

Suggested populations to research:

- Veterans
- Psychiatric major mental illness
- Autism/ASD
- Medical/Cancer
- At-risk youth in schools
- Geriatric

***Music therapy research.*** In 2015, the American Music Therapy Association held a symposium entitled *Improving Access and Quality: Music Therapy Research 2025*. The symposium highlighted recommendations for researching music therapy for individuals with acquired brain injury, as well as a number of recommendations for strengthening music therapy research. These included building research capacity through training and mentoring music therapists in research methodology, and partnering with researchers from other fields including health scientists and economists. Additional recommendations related to research quality, replication, and generalizability. For example, published research should use widely accepted diagnostic frameworks (e.g. ICD-10) to identify the population studied and include standards of specification for the intervention (for example, not just identifying an intervention as “music therapy”). Research designs should focus on specific interventions for specific diagnoses/conditions in order to isolate effective treatments for specific populations. The Association has also identified research goals specifically related to music therapy with military populations. The goals reflect emphases on high quality research, research-to-practice utility, and attention to the service delivery models frequently encountered by military personnel, such as multidisciplinary treatment teams.<sup>90</sup>

***Dance/movement therapy research.*** While not posting a comprehensive research agenda, the American Dance Therapy Association has established a committee to support research in dance therapy. According to the Association website,

The Research and Practice Subcommittee is one of three working teams within the Education, Research and Practice Committee. Its mission is to promote research in the field of dance/movement therapy in several ways:

- Making research related resources as available as possible.
- Assisting ADTA members with their research through consultation around research questions, designs, methods, etc.<sup>91</sup>

Multiple resources are available on the website, including: white papers, literature reviews, and summaries of efficacy studies of dance/movement therapy; bibliographies of dance research by topic; and research informational resources.

Considering dance/movement therapy research within medical contexts, Goodill (2005) emphasizes the need for interdisciplinary collaboration, mixed-method and single case designs, standardization of

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<sup>90</sup> American Music Therapy Association (2014), 35.

<sup>91</sup> <https://adta.org/research-practice/>

treatment, and assessment of therapeutic learning, using psychophysiological and psychosocial measurements.<sup>92</sup>

***Therapeutic/expressive writing research.*** As noted above, writing practices have long been incorporated into therapy. Pennebaker's expressive writing paradigm, which focuses on disclosure of trauma, has been the subject of extensive research since the late 1980s. Over the past two decades, in particular, a number of studies have found health, psychosocial, and physiological benefits of this specific expressive writing paradigm, although this is not true for all interventions and populations.

## CAT Research Considerations

***Research-practice linkage.*** The importance of the relationship between clinical practice and research was underscored in interviews and the research. The existence of multiple terms to refer to this relationship (e.g. research-practice gap, translational research, bench-to-bedside) underscores its importance in clinical and research communities. Indeed, it has been raised as an important issue across CATs: specifically, the need for research to drive clinical practice and vice versa.<sup>93</sup> While indicating strong support for rigorous research, a CAT representative also commented, "The research that says we're actually doing something, changing lives, [that] people can reconsolidate memory: those kinds of things are really more important to me as a clinician." In a similar vein, a medical researcher stressed the need for working directly with creative arts therapists in order for those therapists to "show how to incorporate [CATs] into care."

***CATs and mechanisms of change.*** Across CAT practitioners and in the CAT literature, there is widespread belief in the positive impact of CATs. However, the evidence for those beliefs ranges from anecdotal to outcomes from rigorous research, and many practitioners and researchers of CATs and therapeutic/expressive writing acknowledge that the mechanisms of change are not understood. This is likely the result of multiple factors, including the multiplicity of theoretical underpinnings for each CAT, the complex nature of human psychology, and the lack of targeted and controlled scientific research. For example, art therapy outcomes have been ascribed to a wide range of disparate psychological theories, from psychoanalytic to cognitive-behavioral. As a discipline or practice, there is no unified theory of change to guide the development and testing of research hypotheses. This is also true of the other CAT practices.

***CATs and psychophysiological/neurobiological research.*** With CATs continuing to make forays into medical settings and more specifically into integrative treatment programs such as Creative Forces, there is increasing interest in investigations of the CAT psychophysiological and neurological impacts and their substrates. Due to hypothesized relationships between CATs and stress variables, as well as the relative ease of using psychophysiological measures of stress and arousal (e.g. heart rate, blood pressure), a number of CAT psychophysiological studies have been done and have shown positive outcomes. The results of these studies have shown, for example, that music can be used effectively to assist in vital sign stabilization through entrainment to auditory stimuli and incite physiological responses. In healthcare settings, music has shown to be effective for procedural support by distracting

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<sup>92</sup> Goodill (2005).

<sup>93</sup> For example: Cruz, R.F. and Berrol, C.F. (2000). What does research have to do with it? In R.F Cruz and C.F. Berrol (Eds.), *Dance/movement therapists in action: A working guide to research options*. Springfield, IL: Charles C. Thomas Publisher.

from pain and acting as an auditory analgesic. Research shows that music therapy can assist in reducing pain perception and increasing coping mechanisms, therefore, reducing the need for pharmacological treatment of pain.<sup>94</sup> It has been found that listening to music can act as an anxiolytic agent to help reduce anxiety, both acute/situational and prolonged/generalized, and improve sleep hygiene.<sup>95</sup>

There is also interest in understanding the neural mechanisms associated with CAT interventions and with the observed positive outcomes.<sup>96</sup> This is of particular importance for PTSD and TBI, due to observations of alterations in brain activity with both clinical conditions. Studies of brain activity using electroencephalography (EEG) and quantitative EEG (qEEG) have explored the potential for EEG and qEEG to serve as metrics in CAT research. This area of research is still in the early stages and limited in scope, with few CAT or randomized controlled studies. However, observations of brain activity during art-making, such as painting, drawing, or sculpting, has shown significant differences in cortical regions and qEEG activation bands. The results have led authors to conclude there is potential for qEEG to inform CAT practice and research, that CATs may aid in normalizing brain activity, and that it may be possible to impact neural networks related to emotional regulation during therapy.<sup>97</sup> Observing brain activity during CATs and in comparison to brain activity associated with trauma may ultimately aid in targeting treatment approaches.

Research designs and methodologies for psychophysiological and neurobiological research with CATs requires careful consideration. First, the CAT modalities differ significantly in their use of the senses and their physical demands. This has practical implications for data collection. Second, in order for research results to be both interpretable and meaningful, selection of the biological systems to monitor and the markers within those systems must align with hypotheses for change. With Creative Forces populations, this means working at complex intersections of multiple theories that address psychological issues, neural and/or physiological processes and substrates for change, and CAT processes, all within the context of the clinical conditions of TBI or PTSD.

***CAT research in the context of integrated treatment programs.*** The Creative Forces CATs exist within the context of an integrative medical intervention program for individuals with complex conditions. This can present challenges in isolating the effects of the CAT interventions and requires that research take into account the multi-faceted symptom picture. While there is some evidence of the benefits of using CATs within integrative medicine, as noted above, there is little understanding or theoretical development of the relationships between the different treatment modalities. As one interviewee commented, “Theories of integrative care are wildly different than the individual components that comprise integrated care teams.” Research designs will need to account for the treatment context in

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<sup>94</sup> Mitchell, L.A., and MacDonald, R.A. (2006). An experimental investigation of the effects of preferred and relaxing music listening on pain perception. *Journal of Music Therapy*, 43(4): 295-316.

<sup>95</sup> Hernandez-Ruiz, E. (2005). Effect of music therapy on the anxiety levels and sleep patterns of abused women in shelters. *Journal of Music Therapy*, 42(2): 140-158.

<sup>96</sup> Lusebrink, V.B. (2004). Art therapy and the brain: An attempt to understand the underlying processes of art expression in therapy. *Art Therapy: Journal of the American Art Therapy Association*, 21(5): 125-135

<sup>97</sup> See Belkofer, C.M., and Konopka, L.M. (2008). Conducting art therapy research using quantitative EEG measures. *Art Therapy: Journal of the American Art Therapy Association*, 25(2): 56-63.; Kruk, K.A., Aravich, P.F., and Deaver, S.P. (2014). Comparison of brain activity during drawing and clay sculpting: A preliminary qEEG study. *Art Therapy: Journal of the American Art Therapy Association*, 31(2): 52-60.

order to isolate CAT impacts, and existing study protocols for integrative medicine settings can support this process.

***Tools and Metrics.*** There are many tools and metrics available to assess the effectiveness of CATs. Some are currently used in research, some were suggested during a Creative Forces convening, and others were suggested during interviews. The selection is dependent on the purpose of the research, the underlying hypotheses, and the expected outcomes.

Some of the current research is descriptive, designed to provide information on treatment and implementation strategies. The intentions of these studies are simply to describe treatment protocols and to assess responses. Studies for this purpose have used clinical notes and structured interviews to gather qualitative data.<sup>98</sup>

There are many different checklists and surveys available to assess psychosocial outcomes. These tools assess improvements in mental health symptoms, quality of life, and interactions with the social environment. Some examples used in CAT research studies include the Symptom Checklist-90 (SLC-90), Coping Resource Index (CRI), World Health Organization Quality of Life BREF (WHOQOL-BREF), Hospital Anxiety and Depression Scale (HADS), Structural Analysis of Social Behavior (SASB), Profile of Mood States (POMS), PTSD Checklist for DSM-5 (PCL-M), Patient Health Questionnaire-9 (PQH-9), and Generalized Anxiety Disorder 7-item (GAD-7), the Impact of Events Scale-Revised, and Beck Depression Inventory II.<sup>99</sup> Most of these instruments have the benefit of broad application to a range of populations and established psychometric properties such as validity and reliability.

Additional research has focused on assessing cognitive skills, neuropsychological functioning, attention, and memory. Some of the assessments have included the Mini-Mental State Examination, Neuropsychiatric Inventory (NPI), Cornell Scale for Depression in Dementia, Silver Drawing Test and Draw a Story, Digit Span subtest of the Wechsler Adult Intelligence Scale-III, Rey's Auditory Verbal Learning Test, and Trail-Making Part B.<sup>100</sup>

Some studies, particularly in music therapy, have assessed biological changes and outcomes. Some of the measures include changes in heart rate, cortisol levels, and blood pressure; neuroimaging using positron emission tomography and functional MRI, and electroencephalography (EEG) and sleep monitoring.<sup>101</sup>

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<sup>98</sup> Kaimal, G., Walker, M.S., & Dieterich-Hartwell, R. (in preparation). Using LIWC analysis of clinical notes to assess changes over time for Active Duty Military service members with PTS and TBI.; Papagiannaki, A. Shinebourne, P. (2016). The contribution of creative art therapies to promoting mental health: Using interpretive Phenomenological Analysis to study therapists' understandings of working with self-stigmatization. *Arts in Psychology*, 50: 66-74.

<sup>99</sup> Archer, S., Buxton, S., Sheffield, D. (2015). The effect of creative psychological interventions on psychological outcomes for adult cancer patients: a systematic review of randomized controlled trials. *Psycho-Oncology*, 24(1): 1 – 10; Carr, et al (2012).

<sup>100</sup> Hsu, T.J., Tsai, H.T., Hwang, A.C., Chen, L.U., Chen, L.K. (2017). Predictors of non-pharmacological intervention effect on cognitive function and behavioral and psychological symptoms of older people with dementia. *Geriatrics & Gerontology International*, 17: 28-35; Kopytin (2013); Thaut, et al (2009).

<sup>101</sup> Ugglä, L., Bonde, L.O., Svahn, B.M., Remberer, M., Wrangsjö, B., Gustafsson, B. (2016) Music therapy can lower the heart rates of severely sick children. *Acta Paediatrica*, 105(10): 1225-1230; Thaut, M.H., Davide, T.P. Parsons, L.M. (2014). Human brain basis of musical rhythm perception: Common and distinct neural substrates for meter,



While there are many different tools available, interview participants suggested pulling directly from validated and psychometrically sound tools, rather than self-made tools. For example, an interview participant shared that the National Institutes of Health (NIH) has developed a toolbox of measurement systems to be used for research.<sup>102</sup> There are three sets of tools appropriate for CAT applied research. The NIH Toolbox includes neuro-behavioral measurements to assess cognition, emotional, sensory, and motor functions using an iPad. The PROMIS (Patient-Reported Outcomes Measurement Information System) includes person-centered measures that evaluate physical, mental, and social health, and it is appropriate for individuals with chronic conditions. The Quality of Life in Neurological Disorders (Neuro-QoL) evaluates physical, mental, and social effects for persons with neurological conditions. Each of these tools is available for adults and children. They have been developed by the NIH and validated and standardized for use in clinical and research settings. The NIH provides information and training on administering the measures.

**Research Methodologies.** Many research methodologies have been utilized to assess CAT outcomes. Some research has focused on the approach and impact of CATs using descriptive studies, methodological theory studies, and case studies.<sup>103</sup> To assess the effectiveness of CAT outcomes, quasi-experimental studies and longitudinal studies with a pre- and post- design have been implemented.<sup>104</sup> Further, there are reviews of the literature and meta-analyses,<sup>105</sup> and a limited number of randomized controlled trials.<sup>106</sup>

Although the research methodologies are diverse, interview participants noted the need for high quality studies. They cautioned that this does not necessarily mean all studies must be randomized controlled studies. Instead, some studies should provide a strong foundation of how CATs are implemented; how individuals react or accept the treatment; whether the treatment produces a signal in the biological, psychological, or social realms; methods of delivery; and intervention dosage, duration, and frequency. An interview participant commented,

You need to do all the preliminary work. First you need to have a good understanding of the therapy or how the intervention is working and the mechanistic understanding. Then you need a good planning phase to really have all the building blocks needed for a good efficacy study before you start implementing a large-scale trial.

**Gaps in tools and methodologies.** Although many different tools have been used to assess outcomes and a number of research methodologies have been utilized, the conclusions that can be drawn about

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tempo, and pattern. *Brain Sciences*, 4(2): 428-452; Blanaru, M., Block, B., Vadas, L. Arnon, Z., Ziv, N., Krener, I., Haimov, I. (2012). The effects of music relaxation and muscle relaxation techniques on sleep quality and emotional measures among individuals with posttraumatic stress disorder. *Mental Illness*, 4(2): 59-65; Thaut, M.H., Demartin, M., Sanes, J.N. (2008). Brain networks for integrative rhythm formation. *PLoS ONE*, 3(5): 1-10; Peterson, D.A., Thaut, M.H. (2007). Music increases frontal EEG coherence during verbal learning. *Neuroscience Letters*, 412(3): 217-221;

<sup>102</sup> National Institutes of Health: Health Measures. <http://www.healthmeasures.net/explore-measurement-systems/overview>.

<sup>103</sup> Van Lith (2016).

<sup>104</sup>Thaut, et al (2009).

<sup>105</sup> Archer, et al (2015).

<sup>106</sup> Carr et al (2012).

CAT outcomes are limited. Researchers, clinicians, and practitioners identified a number of gaps in the research.

Under the CAT umbrella, there are many different types of therapy that can be implemented in a multitude of ways. Many studies focus on a specific CAT approach that has been tailored to the client and situation, but is not clearly explained in the research report.<sup>107</sup> This ultimately results in projects that cannot be replicated, and outcomes from the studies cannot be compared because of differences in CAT approaches, lengths of treatment, and measurement tools used. One person said, “We need to systematically catalog what is going on, what is being delivered, and how individuals are reacting to or accepting the treatment.”

Researchers also identified a gap in qualitative data or mixed-method approaches. Specifically, several sources cited a need for clearly defined CAT approaches, information on therapists’ perspectives, and client voice.<sup>108</sup> Much of this could be accomplished using mixed-method approaches, combining qualitative and quantitative methodologies, and using structured interviews. While several studies measured the frequency of participants attending the therapies, few followed up to determine why participants dropped out of therapy or to determine why participants continued to participate.

Other limitations and gaps are evident in the research methodologies, including small sample sizes, lack of blinding in randomized studies, lack of randomized groups, limited time for the therapies, evidence of bias, lack of follow-up, limited sensitivity in the measurement tools, and CAT interventions provided by non-certified personnel.<sup>109</sup> Interviewees noted that some limitations are due to studies being organized around a specialized therapy and population, which limits sample sizes. Instead, they suggested that there need to be networks across facilities, which expands the participant pool. One person shared,

We cannot continue doing interventions with a sample size of 20. We really need to move beyond that to the idea of really enlisting, having research networks that could have the common set of data elements so they can pull data together. You will never be able to make something strong with small sample sizes.

They underscored the importance of researchers and practitioners working in collaboration on the projects. Specifically, researchers can design the methodology of the study and work with the practitioners to ensure they agree with the clinical approach and are trained to implement the treatment around a specific protocol. The researcher can also identify tools and methodologies that would be sensitive to the treatment. Several interviewees recommended incentive grant programs that require partnerships between practitioners and researchers.

Interviewees also cautioned against jumping directly to randomized controlled studies, which, without sufficient groundwork, can ultimately lead to low quality research. Prior to doing these studies, they suggested developing the sound theoretical bases needed to describe “what works, how it works, when it works, and why it works.” Once the foundation is laid, research should move forward in comparing approaches, such as two different CAT disciplines or a standardized intervention within a CAT. To

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<sup>107</sup> Van Lith (2016).

<sup>108</sup> Ibid.

<sup>109</sup> Carr, et al (2012); Brillantes-Evangelista (2013); Thaut, et al (2009); Uttley, et al (2015).



increase sample sizes, researchers suggested that the randomization of patients could occur across facilities.

Finally, researchers acknowledged that a research agenda could take many different directions given the diversity of CATs. Rather than conducting research in all CATs used in Creative Forces, researchers suggested a tight focus in one or two areas using a coherent framework. They also identified other areas of interest. For example, there is little evidence demonstrating the economic impact of CATs, and they suggested that this should be included in the research agenda. They also suggested exploring the impact of CATs with family members.

***The importance of collaborative research.*** Among interviewees and across CAT disciplines, there was strong advocacy for collaborative research for the purposes of enhancing research quality and for maximizing its impact. Both are captured in reference to dance/movement therapy by Goodill (2005, P. 172):

To truly embrace the biopsychosocial model in clinical research, the organistic-systems approach makes sense. The only way that dance/movement therapists or any other researchers can address the multi-level, multicausal questions that are at the heart of holistic health care is to work in multidisciplinary teams and to think about the research in interdisciplinary ways...In those [collaborative] relationships, all parties strive to find common theoretical ground and to keep the focus on the biopsychosocial needs of the patient.<sup>110</sup>

Interviewees noted the practical reasons for multidisciplinary collaborative research. Specifically, collaborations expand the knowledge pool for a study, in terms of the phenomenon under investigation and research methodologies, broaden the scope of what can legitimately be studied, and extend the range of platforms for dissemination. A variety of disciplines were recommended for collaboration with CAT researchers and practitioners: medical/health psychology, military psychology, neurology, psychophysiology, neuropsychology, neurophysiology, research methodology, statistics, biofeedback, and medical/health economics.

In interviews and literature reviews, clinicians and researchers noted challenges to developing collaborative partnerships. Some reported difficulty in finding partners from appropriate fields who are open to learning from colleagues and invested in collaboration. Partners also need adequate resources to commit to a partnership. Researchers and clinicians acknowledged there is a learning curve in participating in multi-disciplinary collaborations. One researcher commented, “Everyone brings something unique to the table. You have to be able to talk openly with each other about strengths and weaknesses, areas of competence, and gaps in knowledge and skills. All of us walk away smarter...we get to bring all our minds to bear on this one problem and possibly come up with a new theory of how [CATs] contribute to [patient] care and outcomes.” The importance of similar partnerships in the context of community health programs has also been addressed by the NEA.<sup>111</sup>

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<sup>110</sup> Goodill (2005).

<sup>111</sup> Chapline, J., and Johnson. J.K. (2016). *The National Endowment for the Arts Guide to Community-Engaged Research in the Arts and Health*. Washington, DC: NEA Office of Research & Analysis.  
<https://www.arts.gov/publications/national-endowment-arts-guide-community-engaged-research-arts-and-health>

***Additional research considerations.*** Across various literature reviews of CAT research and during interviews, some common concerns emerged regarding CAT research that need to be addressed in future endeavors. These included but were not limited to:

- Omission of key study details in research reports
- Lack of standardized definitions of patient clinical conditions
- Not accounting for comorbid conditions
- Lack of standardization of intervention protocols
- Lack of common measures, or inconsistent use of common measures
- Heterogeneous groupings of subjects
- Lack of comparison groups
- Lack of understanding of evidence hierarchies associated with research designs

## SECTION 6: RESEARCH SYNTHESIS AND GAP ANALYSIS

As noted previously, there are many layers of complexity in which a Creative Forces research initiative will operate. Chief among them are: different clinical practice across CAT types; the current status of research evidence and research practices across CAT types; the unique populations served by Creative Forces; and the role of CATs in integrative medicine. In addition, there is the specific challenge of a research-to-practice (and practice-to-research) knowledge gap.

***The diverse nature of CATs.*** The CATs differ on many dimensions: modality, clinical approach, and development as a discipline. Further, within each CAT, there are multiple theoretical perspectives that are used to drive clinical practices and explain treatment outcomes. The diversity of CATs presents a challenge for establishing a unified research agenda around the use of CATs and therapeutic/expressive writing. It will be important for the agenda to distinguish between programmatic-level research, applicable to all Creative Forces CATs, and research that is limited to a specific CAT due to the modality or theoretical foundation. For example, the client-therapist relationship could be studied programmatically, while CAT-specific studies could focus on the role of physical movement or visual imagery.

***The status of CAT research.*** While research into CAT and therapeutic/expressive writing outcomes suggests various benefits for specific therapeutic approaches, there are many limitations to this research. The studies often have yielded descriptive findings rather than outcomes-based evidence about the direct effects of these intervention. For the CATs overall, there is a need for more theory-driven research to formulate compelling hypotheses and research questions.

Also needed is more careful selection of study designs and outcome measures that align with those hypotheses and research questions, while accounting for the constraints and opportunities of the clinical practice setting. (Consistent with this requirement is a need to understand and appreciate the hierarchy of evidence-based practice so that any claims about research findings are appropriate to the study outcomes.) As part of any clinical research protocol, moreover, it remains necessary to keep accurate records of CAT treatment methodologies and implementation. Finally, effective dissemination of data, metrics, and evidence is essential to the advancement of such research.

These gaps in CAT research have implications for the Creative Forces research agenda: specifically, Creative Forces will need to develop research protocols and tools for the conduct of rigorous research.

***The complexities of the populations Creative Forces serves.*** Creative Forces supports military-connected personnel with PTSD and/or TBI, as well as their families. PTSD and TBI are distinct conditions, each with various causes and impacts. Individually and in tandem, they have complex substrates, and their impacts span an individual's physical, psychological, and social existence. These complexities will impact interpretation of research results and also need to be addressed in developing ethical research designs and protocols.

***The use of CATs in integrative medicine.*** While there are research models for studying therapeutic interventions within integrative medicine, the research on CATs in this context has been minimal. If the intention is to consistently base Creative Forces within integrative settings, the research must take into account factors associated with this treatment context, such as synergistic treatment effects, multi-disciplinary collaboration and case management, and patients' treatment selection. These considerations are particularly important if a research goal is to understand the mechanisms associated with a given CAT.

***CAT research/practice knowledge gaps.*** Across interviews and the reviews of CAT literature, there was consensus that a significant gap exists between knowledge of the clinical practices of CATs and knowledge of effective research practices. Further, the gap results in a lack of outcomes-based evidence for the use of CATs. Unless intentionally addressed in the Creative Forces research agenda, the gap is likely to perpetuate. A strong research agenda will optimize the exchange of knowledge between practitioners and researchers.

## SECTION 7: RESEARCH RECOMMENDATIONS

This research synthesis is intended to inform the future discussions that will establish a research agenda for the Creative Forces program. Recommendations for initial steps and an initial list of research questions are provided below.

**Establish research priorities based on the research gap analysis and the detailed findings of the synthesis. Potential initial steps include:**

- Develop a Logic Model/Theory of Change with Creative Forces as an umbrella program that utilizes CATs and therapeutic/expressive writing as interventions within integrative medicine. This can be structured around psychosocial, biological, and economic outcomes and should provide a structure for logical, developmental, and sequential research.
- Develop individual Logic or Measurement Models for priority CATs and/or for therapeutic/expressive writing, which take into account the unique foundations and modalities of each discipline and address both basic descriptive research and outcome studies.
- Investigate existing research models and measurement tools used to study psychological, physiological, and neurological outcomes of specific interventions within integrative treatment settings. This includes ethical and effective approaches to randomized controlled trials, such as random assignment using wait-listed controls, randomization by facility, or patient preference trials. The NIH Toolbox may also provide measurement resources. Functional and general health

outcomes measures are critical as they shed light on impacts related to the client and system economics impacts.

- Within the CAT and therapeutic/expressive writing disciplines, evaluate state-of-the-art treatment protocols, measurement tools, and research designs currently in use. Determine whether these are sufficiently robust to produce rigorous research.
- Consider multi-site studies to increase study size and generalizability.
- Develop an intentional approach to building research/practice partnerships and capacity for research. Potential approaches include a program-level advisory panel and/or discipline-specific research teams that facilitate exchange of knowledge about CAT practices and research principles.

**Identify specific areas of focus for a Creative Forces CAT research agenda. A Creative Forces Logic Model/Theory of Change, as well as CAT-specific Logic/Measurement Models for the program, will help to identify priorities and the logical sequencing of research. Meanwhile, specific research questions that emerged from the synthesis and gap-analysis include:**

#### **CAT implementation**

- How can CAT interventions be quantified so the variables of dose and duration can be measured?
- How are outcomes related to key treatment variables, such as length of session, duration of treatment, individual versus group therapies, and co-treatments with other disciplines?
- Which CAT treatment outcomes are replicable for specific diagnoses and with specific populations?
- How does the timing of CAT intervention, relative when the trauma, injury, or military discharge occurred, impact outcomes?
- How do CAT interventions and outcomes differ for military populations: active duty service members, veterans, and military-connected families?

#### **CATs and integrative care**

- What are the benefits of CATs to an integrative care model?
- What are the relationships between CATs and other treatments within integrative care?
- To what extent and in what ways can CATs serve as replacement therapies for pharmacotherapy?

#### **CAT mechanisms**

- Based on the theoretical foundations for individual CATs, what hypotheses can be advanced about physiological or neurological mechanisms associated with treatment outcomes, and what are the relevant biomarkers?
- What are potential common mechanisms of change (e.g. stress reduction, client-therapist relationship, memory consolidation) across CATs and how can they be tested?

#### **CATs and TBI/PTSD**

- To what extent should CAT treatment protocols differ for PTSD and TBI, given the mechanisms of these conditions?
- How do CATs impact PTSD and TBI outcomes?

- If CATs impact emotional regulation and social engagement, what are the physiological and neurobiological correlates of those changes in individuals with PTSD and TBI?
- How do CATs affect the course of recovery from TBI, and can this be documented in neurobiological terms?
- Does including pain as an element of the polytrauma triad (PTSD, TBI, pain) impact outcomes?

**CATS and other impacts**

- What are the long-term impacts of CAT interventions, as identified through follow-up studies?
- To what extent do CATs result in clients' increased capacity to work?
- To what extent do CATs reduce health care costs?

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**APPENDIX A – NCCATA PROFESSIONS OVERVIEW**



### National Coalition of Creative Arts Therapies Associations: Professional Overview

The National Coalition of Creative Arts Therapies Associations (NCCATA [www.nccata.org](http://www.nccata.org)) was founded in 1979, establishing an alliance of membership associations “dedicated to the advancement of the creative arts therapies professions.” NCCATA currently represents over 15,000 individual members of six creative arts therapies associations in the United States, including: American Art Therapy Association, American Dance Therapy Association, American Music Therapy Association, American Society for Group Psychotherapy and Psychodrama, North American Drama Therapy Association, and National Association for Poetry Therapy. As of June 2016, NCCATA compiled the following professional information for music, art, and dance/movement therapy, which are utilized in the Creative Forces program. Similar information for poetry therapy, drama therapy, and psychodrama professions is also available on the NCCATA website.

	<b>Music Therapy</b>	<b>Art Therapy</b>	<b>Dance/Movement Therapy</b>
<b>National Association</b>	American Music Therapy Association (AMTA)	American Art Therapy Association (AATA)	American Dance Therapy Association (ADTA)
<b>Minimum Education Level Required to Practice</b>	Bachelor’s	Master’s	Master’s
<b>Education Levels Offered</b>	Bachelor’s, Master’s, PhD	Master’s, PhD	Master’s, PhD
<b>Minimum Credentials or Certification Required to Practice</b>	Music Therapist – Board Certified (MT-BC)	Registered Art Therapist (ATR)	Registered Dance/Movement Therapist (R-DMT)
<b>Credentialing Agency</b>	The Certification Board for Music Therapists (CBMT)	Art Therapy Credentials Board, Inc. (ATCB)	Dance/Movement Therapy Certification Board (DMTCB)
<b>Training Required for Credentials</b>	1,050 hr supervised practicum during Bachelor’s + Exam	700 hr supervised practicum during Master’s, 1000 paid clinical hrs post-graduate w/ 100 hrs supervision	200 hrs supervised fieldwork, 700 hr practicum w/ 70 hr supervision during Master’s
<b>Additional Credentials Available</b>	N/A	Registered Art Therapist – Board Certified (ATR-BC) Exam required	Board Certified Dance/Movement Therapist (BC-DMT) 3640 paid hrs + Exam required
<b>Continuing Education Required</b>	100 CEUs every 5 years	100 CEUs every 5 years ATR-BC only	100 CEUs every 5 years BC-DMT only
<b>State Licensure Available</b>	In several states (contact <a href="mailto:info@musictherapy.org">info@musictherapy.org</a> for more info)	In several states (contact <a href="mailto:info@arttherapy.org">info@arttherapy.org</a> for more info)	In a few states
<b>Code of Professional Practice/Ethics</b>	Yes	Yes	Yes





## APPENDIX B – PTSD DIAGNOSTIC CRITERIA



## DSM-5 Diagnostic Criteria for PTSD

The following information was obtained from the U.S. Department of Veterans Affairs website.<sup>112</sup> Full copyrighted criteria are available from the American Psychiatric Association.<sup>113</sup> The following text summarizes the diagnostic criteria. All of the criteria are required for the diagnosis of PTSD.

**Criterion A (one required):** The person was exposed to: death, threatened death, actual or threatened serious injury, or actual or threatened sexual violence, in the following way(s):

- Direct exposure
- Witnessing the trauma
- Learning that a relative or close friend was exposed to a trauma
- Indirect exposure to aversive details of the trauma, usually in the course of professional duties (e.g. first responders, medics)

**Criterion B (one required):** The traumatic event is persistently re-experienced, in the following way(s):

- Intrusive thoughts
- Nightmares
- Flashbacks
- Emotional distress after exposure to traumatic reminders
- Physical reactivity after exposure to traumatic reminders

**Criterion C (one required):** Avoidance of trauma-related stimuli after the trauma, in the following way(s):

- Trauma-related thoughts or feelings
- Trauma-related reminders

**Criterion D (two required):** Negative thoughts or feelings that began or worsened after the trauma, in the following way(s):

- Inability to recall key features of the trauma
- Overly negative thoughts and assumptions about oneself or the world
- Exaggerated blame of self or others for causing the trauma
- Negative affect
- Decreased interest in activities
- Feeling isolated
- Difficulty experiencing positive affect

**Criterion E (two required):** Trauma-related arousal and reactivity that began or worsened after the trauma, in the following way(s):

- Irritability or aggression
- Risky or destructive behavior
- Hypervigilance
- Heightened startle reaction
- Difficulty concentrating
- Difficulty sleeping

<sup>112</sup> See [https://www.ptsd.va.gov/professional/PTSD-overview/dsm5\\_criteria\\_ptsd.asp](https://www.ptsd.va.gov/professional/PTSD-overview/dsm5_criteria_ptsd.asp)

<sup>113</sup> American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). Washington, DC: American Psychiatric Association.

**Criterion F (required):** Symptoms last for more than 1 month.

**Criterion G (required):** Symptoms create distress or functional impairment (e.g. social, occupational).

**Criterion H (required):** Symptoms are not due to medication, substance use, or other illness.

**Two specifications:**

- **Dissociative Specification.** In addition to meeting criteria for diagnosis, an individual experiences high levels of either of the following in reaction to trauma-related stimuli:
  - Depersonalization. Experience of being an outside observer of or detached from oneself (e.g. feeling as if "this is not happening to me" or one were in a dream).
  - Derealization. Experience of unreality, distance, or distortion (e.g. "things are not real").
- **Delayed Specification.** Full diagnostic criteria are not met until at least six months after the trauma(s), although onset of symptoms may occur immediately.

**APPENDIX C – CREATIVE FORCES RESEARCH INVENTORY**





**CREATIVE FORCES – MUSIC THERAPY STUDIES**

<b>STUDY NAME</b>	<b>Impact of music on emotional regulation for service members with PTSD</b> (Grammy Foundation Study)
<b>AUTHORS/RESEARCH TEAM</b>	Joke Bradt, John Hughes, Grant Bonavia, Rebecca Vaudreuil, Nathan McLaughlan
<b>ABSTRACT</b>	<p>This exploratory study examines the impact of listening to music on cortical alpha power, cortical functional connectivity, and cortical volume in brain areas associated with emotional regulation in service members (SMs) with Post Traumatic Stress Disorder (PTSD).</p> <p>In this prospective, randomized controlled study, 20 SMs with PTSD are randomized to either an emotional regulation training (ERT) treatment arm or a non-ERT treatment arm. The ERT treatment arm consists of three music-based ERT training sessions. Participants in the non-ERT treatment arm do not receive ERT training. MEG, fMRI and MRI measurements are obtained at baseline and after 3 months. MEG activity is recorded while participants listen to various music conditions.</p> <p>At 1, 2, 3, 6, and 12 months, all participants will be asked to fill out a brief online survey to assess their continued use of music for emotional regulation.</p>
<b>POPULATION STUDIED</b>	Active duty military and veterans with PTSD diagnosis N = 20: 10 control, 10 experiential
<b>TREATMENT</b>	<p>Music Therapy</p> <p>Music listening without ERT training (control group)</p> <p>Music therapy ERT training (experiential group)</p> <p>Each study participant, regardless of treatment allocation, receives 1 music consult session; participants assigned to the ERT treatment arm participate in 3 additional music therapy sessions following the consult session.</p>
<b>STUDY DESIGN</b>	Randomized Controlled Trial
<b>METHODS AND MEASURES</b>	<p>After the baseline neuroimaging recording sessions, participants are randomized to the emotional regulation training (ERT) group or the non-ERT group using computer-generated randomization scheme with block randomization. Participants assigned to the ERT group receive three training sessions with the NiCoE music therapist, targeted at using music listening for emotional regulation. Participants assigned to the control group are told that music listening can help with emotional regulation but will not receive ERT. MEG and MRI are repeated with all subjects after 3 months. Study personnel involved with collecting and analyzing brain imaging data are not aware of the participant group assignment.</p> <p>Measures: Neuro-imaging: MEG, fMRI, MRI, and questionnaires related to music use and home practice</p>
<b>STATUS</b>	This study is approved by WRNMMC/NiCoE (IRB) and is in early stages of data collection.

<b>STUDY NAME</b>	<b>A thematic analysis of original songs created by service members</b> (working title)
<b>AUTHORS/RESEARCH TEAM</b>	Joke Bradt, Rebecca Vaudreuil, Hannah Bronson
<b>ABSTRACT</b>	<p>This study aims to analyze songs written by active duty service members with combat-related Post Traumatic Stress Disorder (PTSD), Mild Traumatic Brain Injury (mTBI), and psychological health issues who receive music therapy services at the National Intrepid Center of Excellence (NICoE).</p> <p>Songs were written over the course of two or more individual music therapy sessions. Lyrics and music were written collaboratively by the service member and the music therapist. Songs were recorded and produced by the music therapist, and a CD was created for the service member to share with friends and loved ones.</p> <p>Thematic analysis as per Braun &amp; Clarke (2006) will be used to code each song and identify themes. In addition, clinical notes about the songwriting sessions will be analyzed. Associations between the identified themes and demographic and clinical characteristics of the service members will be examined.</p>
<b>POPULATION STUDIED</b>	Active duty service members in music therapy treatment at NICoE N ≈ 15
<b>TREATMENT</b>	Music Therapy Standalone Each patient who wrote a song in music therapy received at least 2-3 individual music therapy sessions to complete songwriting/recording projects.
<b>STUDY DESIGN</b>	Thematic Analysis and Correlational Analyses
<b>METHODS AND MEASURES</b>	Thematic analysis of songs written by service members and clinical notes of the songwriting sessions. Associations between identified themes and patient clinical and demographic characteristics will be examined.  Measures: Not Applicable
<b>STATUS</b>	IRB submission

<b>STUDY NAME</b>	<b>Music Therapy treatment of active duty military: An overview of intensive outpatient and longitudinal care programs</b>
<b>AUTHORS/RESEARCH TEAM</b>	Hannah Bronson, Rebecca Vaudreuil, Joke Bradt
<b>ABSTRACT</b>	As a result of recent conflicts that involve the United States Military, there is an emerging need for music therapy services within military treatment facilities to treat combat-related injuries. The complexity of traumatic brain injury, posttraumatic stress, and military service itself presents challenges for music therapists when creating patient-centered program models. As military healthcare increases access to new treatments as a standard of care, it is important for music therapists to provide descriptions of effective treatment models in military settings. Outlining established music therapy models of care is essential to the successful addition of music therapy in the treatment of service members' complex injuries. This paper outlines current program models at two facilities, The National Intrepid Center of Excellence (NICoE) at Walter Reed National Military Medical Center and Intrepid Spirit Fort Belvoir.
<b>POPULATION STUDIED</b>	Not applicable
<b>TREATMENT</b>	Music Therapy Standalone within integrated medicine
<b>STUDY DESIGN</b>	Clinical Practice Paper: Description of Clinical Practice
<b>METHODS AND MEASURES</b>	Measures: Not applicable
<b>STATUS</b>	Submitted to <i>Music Therapy Perspectives</i> .

<b>STUDY NAME</b>	<b>The effects of individual music therapy services on symptom management in service members at Intrepid Spirit Center, Fort Belvoir</b> (working title)
<b>AUTHORS/RESEARCH TEAM</b>	Hannah Bronson, Rebecca Vaudreuil, Joke Bradt
<b>ABSTRACT</b>	This study is a secondary analysis of symptom management data that were collected as part of standard music therapy program evaluations at Intrepid Spirit Fort Belvoir. Approximately 200 service members completed the Creative Forces Symptom Management evaluation form at the start and end of individual music therapy sessions between July 2016 and August 2017. This 10-item form uses 0-10 numeric rating scales to evaluate the impact of a single music therapy session on commonly encountered symptoms in service members, namely pain, stress, anxiety, fatigue, worries, physical tension, sadness, anger, ability to focus, and overall well-being. Paired t-tests will be used to analyze pre to post session changes in symptoms. The findings will be associated with clinical characteristics of the service members.
<b>POPULATION STUDIED</b>	Active duty service members in music therapy treatment at Intrepid Spirit Fort Belvoir N ≈ 200
<b>TREATMENT</b>	Music Therapy Standalone Results will include a year’s worth of evaluations, most likely from July 01, 2016 to August 31, 2017.
<b>STUDY DESIGN</b>	One Group Pretest Posttest Design
<b>METHODS AND MEASURES</b>	During the past year, service members were asked to fill out the symptom assessment form at the start and end of the music therapy session. At this time, data on approximately 200 service members has been gathered. The research team will use paired t-tests to analyze pre to post session changes in symptoms and will correlate changes in symptoms to clinical characteristics of the service members.  Measures: Symptom Assessment Form included in the NEA Evaluation Toolkit.
<b>STATUS</b>	This study is ongoing. Authors plan to submit to the <i>Journal of Music Therapy</i> or potentially a medical journal.

<b>STUDY NAME</b>	<b>An exploration of the intersection for Complementary Alternative Medicine (CAM) and traditional treatment</b> (working title)
<b>AUTHORS/RESEARCH TEAM</b>	Michelle Nordstrom, Rebecca Vaudreuil
<b>ABSTRACT</b>	<p>This paper investigates intervention implementation and co-treatment of Occupational Therapy, Animal-Assisted Therapy, and Music Therapy focusing on emotional regulation while following a patient who utilizes the emWave during therapy sessions.</p> <p><i>Note: This paper is not based on the Creative Forces initiative and will be published by an Occupational Therapy Researcher at WRNMMC; however, a Creative Forces Music Therapist worked on this paper and makes mention of Creative Forces in the manuscript.</i></p>
<b>POPULATION STUDIED</b>	Case Study N = 1
<b>TREATMENT</b>	Music Therapy Integrated (Occupational Therapy, Music Therapy, Animal Assisted Therapy)
<b>STUDY DESIGN</b>	Case study
<b>METHODS AND MEASURES</b>	<p>Clinical co-treatment (OT/Music therapy), clinical notes/documentation, emWave frequency readings</p> <p>Measures: Clinical documentation, heart rate variability readings</p>
<b>STATUS</b>	The study is complete, and the paper is currently in the editing process.

<b>STUDY NAME</b>	<b>Music therapy applied to complex blast injury in an interdisciplinary model: A case report</b>
<b>AUTHORS/RESEARCH TEAM</b>	Rebecca Vaudreuil, Luis Avila, Joke Bradt, Paul Pasquina
<b>ABSTRACT</b>	While there is increasing evidence demonstrating the efficacy of music therapy in clinical and medical settings, music therapists are still not commonplace in the traditional interdisciplinary rehabilitation model. This case report highlights the impact that music therapy has had on one severely injured service member and further underscores the need for continued research in this field.
<b>POPULATION STUDIED</b>	Military service member in ongoing rehabilitation from complex blast injury N = 1
<b>TREATMENT</b>	Music Therapy Integrated medicine, standalone treatment The patient receives ongoing treatment, including 2+ years of integrated and stand-alone music therapy services.
<b>STUDY DESIGN</b>	Case Report
<b>METHODS AND MEASURES</b>	Music therapy was provided as stand-alone treatment and in co-treatment with speech language pathology, physical therapy, and occupational therapy.  Measures: Clinical data, self-reports by patient and family, interviews with rehabilitation team members
<b>STATUS</b>	The study is complete and has been submitted to NICOE/WRNMMC PAO for approval. Manuscript will be submitted to Disability and Rehabilitation as soon as approval is granted.

<b>STUDY NAME</b>	<b>Analysis of patient-selected songs in music therapy intended for performance</b> (working title)
<b>AUTHORS/RESEARCH TEAM</b>	Rebecca Vaudreuil, Hannah Bronson, Joke Bradt
<b>ABSTRACT</b>	<p>This study aims to analyze musical selections and describe the process of learning and performing patient-selected songs by active duty service members with combat-related Post Traumatic Stress Disorder (PTSD), Mild Traumatic Brain Injury (mTBI), and psychological health issues who receive music therapy services at the National Intrepid Center of Excellence (NICoE).</p> <p>Songs were learned and refined over the course of multiple music therapy sessions. Lyrics and music were collaboratively customized and arranged by the patients and music therapist to capture song significance and symbolism of performance. Patients worked with the music therapist to create and process song introductions, in which the patients verbally shared song meanings and processes of learning the self-selected songs with an audience.</p> <p>In addition to content analysis, clinical notes from the music therapy sessions will be analyzed. Associations between the identified themes and demographic and clinical characteristics of the service members will be examined.</p>
<b>POPULATION STUDIED</b>	Active duty service members in music therapy treatment at NICoE N = 10 to 15
<b>TREATMENT</b>	Music Therapy Standalone Ongoing; at least 2 sessions with each patient
<b>STUDY DESIGN</b>	Case Report: Qualitative Research Study
<b>METHODS AND MEASURES</b>	<p>Thematic analysis of song lyrics and associated clinical notes to identify themes and enhance understanding of the meaning and value of songs selected by service members for public performance.</p> <p>Measures: Clinical observation, documentation, song lyrics, and performance</p>
<b>STATUS</b>	This study is ongoing.



<b>STUDY NAME</b>	<b>Group music therapy services at the National Intrepid Center of Excellence: Protocol and program evaluation</b> (working title)
<b>AUTHORS/RESEARCH TEAM</b>	Rebecca Vaudreuil, Hannah Bronson, Danielle Vetro-Kalseth, Joke Bradt
<b>ABSTRACT</b>	This article evaluates the Introduction to Music Therapy group session offered at the National Intrepid Center of Excellence (NICoE) in Bethesda, MD. Music therapy is one of the many creative arts therapies and interdisciplinary treatment modalities offered within the context of the four-week long, intensive outpatient program designed to treat service members with posttraumatic stress disorder (PTSD), mild traumatic brain injuries (mTBI), and other psychological health issues. This paper shares the Introduction to Music Therapy group protocol, the session evaluation form, and the results from a year's worth of session evaluation data by cohorts of patients receiving this group session. In addition, this paper presents feedback by three music therapists regarding the use and value of the introductory group treatment protocol and associated session feedback form for treatment planning.
<b>POPULATION STUDIED</b>	Active duty service members in music therapy treatment at NICoE N ≈ 200
<b>TREATMENT</b>	Music Therapy Standalone Each patient receives this session once. The authors will show a year's worth of evaluations, most likely January 01, 2016 to December 31, 2016.
<b>STUDY DESIGN</b>	Program evaluation
<b>METHODS AND MEASURES</b>	Session evaluation data from approximately 200 service members will be analyzed. Descriptive statistics will be used to create summaries of impact in areas specified on the form. In addition, feedback from three clinicians who currently use the group protocol and the associated evaluation tool will be summarized. Based on evaluation data and clinician feedback, recommendations will be made for use of the protocol and evaluation form in military health settings.  Measures: The Introduction to Music Therapy Group Session form, a self-reported form included in the NEA evaluation toolkit.
<b>STATUS</b>	This study is ongoing.

**CREATIVE FORCES – ART THERAPY STUDIES**

<b>STUDY NAME</b>	<b>Associations between visual representations on montage paintings and measures of depression, anxiety, quality of life and PTSD among active duty military service members</b>
<b>AUTHORS/RESEARCH TEAM</b>	Marygrace Berberian, Melissa S. Walker, Marcia Liebman, Girija Kaimal
<b>ABSTRACT</b>	This paper will provide an overview of the themes represented in the montage paintings created by service members as well as associations between visual imagery and standardized measures of depression, anxiety, quality of life, and post-traumatic stress.
<b>POPULATION STUDIED</b>	Service members in art therapy treatment at National Intrepid Center of Excellence (NICoE) N= 220
<b>TREATMENT</b>	Visual art Integrated
<b>STUDY DESIGN</b>	Between group comparisons of data on clinical symptoms and visual themes in montage painting imagery using ANCOVA & correlational analyses
<b>METHODS AND MEASURES</b>	Associations between scores on the PTSD Checklist–Military (PCL-M), the Patient Health Questionnaire-9, Satisfaction with Quality of Life, and the Generalized Anxiety Disorder 7-item scale on visual themes in the montage paintings  Measures: Themes in montage paintings, PTSD Checklist–Military (PCL-M), the Patient Health Questionnaire-9, Satisfaction with Quality of Life, and the Generalized Anxiety Disorder 7-item scale
<b>STATUS</b>	This manuscript is in preparation.

<b>STUDY NAME</b>	<b>Evaluation of the art therapy at Fort Belvoir Intrepid Spirit One</b>
<b>AUTHORS/RESEARCH TEAM</b>	Jacqueline P. Jones, Adele Gonzaga, Bronwen Landless, Girija Kaimal
<b>ABSTRACT</b>	This report presents an evaluation of art therapy programs at Intrepid Spirit at Fort Belvoir (ISO). Fort Belvoir Community Hospital is located on the Fort Belvoir base in northern Virginia and serves military service members (SMs) from the local region. It provides state of the art care to active duty SMs, retired SMs, and their families. The hospital also supports cutting edge research in order to provide optimal clinical care to SMs. Art therapy is offered at the ISO as part of a range of therapies and aims to help service members express themselves and process traumatic experiences from their past.
<b>POPULATION STUDIED</b>	Military service members in art therapy treatment at Intrepid Spirit Fort Belvoir N=200
<b>TREATMENT</b>	Art therapy and therapeutic/expressive writing Standalone  Service members participate in three to nine weeks of individual and group therapy sessions.
<b>STUDY DESIGN</b>	Evaluation, mixed-methods
<b>METHODS AND MEASURES</b>	Includes a summary of feedback surveys collected over a two-year period. Qualitative and quantitative responses were analyzed using descriptive statistics and thematic analysis.  Measures: Narrative and Likert-scaled feedback surveys
<b>STATUS</b>	The study is complete, and the full citation is:  Jones, J.P., Gonzaga, A. & Landless, B.M. & Kaimal, G. (2015). <i>Evaluation of the art therapy at Fort Belvoir Intrepid Spirit One</i> . Report prepared for the Fort Belvoir Community Hospital and the National Endowment for the Arts. Philadelphia, PA: Drexel University.

<b>STUDY NAME</b>	<b>Portraits of recovery: Collective case studies of art therapy interventions for military service members with PTS and TBI</b>
<b>AUTHORS/RESEARCH TEAM</b>	Jaqueline P. Jones, Jessica M. Drass, Girija Kaimal
<b>ABSTRACT</b>	This paper will summarize a series of case examples of how art therapy helped active duty military service members address and manage symptoms related to traumatic brain injury and post-traumatic stress. The case examples will include short and long term art therapy strategies used in the integrated care setting as well as patient reported outcomes.
<b>POPULATION STUDIED</b>	Active duty service members in art therapy treatment in an integrated care setting N=4
<b>TREATMENT</b>	Visual art Integrated
<b>STUDY DESIGN</b>	Case summaries
<b>METHODS AND MEASURES</b>	Includes case summaries describing range of art therapy approaches for service members with PTS and TBI.
<b>STATUS</b>	This manuscript is in preparation.

<b>STUDY NAME</b>	<b>Art therapy interventions for active duty military service members with PTS and TBI</b>
<b>AUTHORS/RESEARCH TEAM</b>	Jacqueline P. Jones, Melissa S. Walker, Jessica M. Drass, Girija Kaimal
<b>ABSTRACT</b>	<p>This paper provides an overview of short and long-term treatment approaches in art therapy for military service members with post-traumatic stress and traumatic brain injury. The described clinical approaches are based on the theoretical foundations and the art therapists' experiences in providing individualized care for the unique needs of the patient population. The art therapy models and directives are designed to be more therapist-led in the short-term model, moving on to an increasingly patient-led format in the long-term treatment model. The overall objectives of art therapy are to: support identity integration, externalization, and authentic self-expression; promote group cohesion; and process grief, loss, and trauma. In addition, program evaluation is used in both settings as a means to understand participants' experiences and the perceived value of art therapy.</p> <p>In addition to clinical approaches, the paper also highlights the value of program evaluation to document perceptions, outcomes, and data to advocate for art therapy services. These approaches point to a need for clinicians to balance evidence-based treatment modalities that focus on symptom reduction as well as the cultivation of a deeper understanding of self in order to work to resolve internal conflicts so often experienced by service members (SMs). Through the art therapy journey, SMs shift to establish a new sense of self as creator rather than destroyer, as productive and efficacious instead of broken, as connected to others as opposed to isolated, and in control of their future, not controlled by their past.</p>
<b>POPULATION STUDIED</b>	Not Applicable
<b>TREATMENT</b>	Art Therapy Integrated medicine, standalone treatment
<b>STUDY DESIGN</b>	Clinical Practice Paper
<b>METHODS AND MEASURES</b>	Description of art therapy clinical practice and use of evaluation in two settings.
<b>STATUS</b>	This manuscript has been accepted for publication in the <i>International Journal of Art Therapy</i> .

<b>STUDY NAME</b>	<b>Associations between visual imagery and clinical symptoms among active-duty military and service members with Posttraumatic Stress Disorder and Traumatic Brain Injury</b>
<b>AUTHORS/RESEARCH TEAM</b>	Girija Kaimal, Melissa S. Walker, Joanna Herres, Louis M. French, Thomas J. DeGraba
<b>ABSTRACT</b>	<p>Affective symptoms and struggles related to verbally expressing information can limit communication in individuals with posttraumatic stress symptoms and deployment-related health conditions. Visual self-expression through art therapy is an alternative way for military service members (SMs) with posttraumatic stress disorder (PTSD) and other psychological health (PH) conditions to communicate their lived experiences. This study offers the first systematic examination of associations between visual self-expression and how it relates to standardized clinical self-report measures.</p> <p>Comparisons of the visual and clinical data indicate that SMs who depicted psychological injury also had higher scores for posttraumatic stress and depression. However, the depiction of military unit identity, nature metaphors, sociocultural metaphors, and cultural and historical characters was associated with lower posttraumatic stress, depression, and anxiety scores. Similarly, the use of color-related symbolism and fragmented military symbols was associated with higher anxiety, depression, and posttraumatic stress scores. There are emergent patterns of resilience and risk embedded in the use of images created by the participants, which in turn could provide valuable information for patients, clinicians and caregivers serving this population.</p>
<b>POPULATION STUDIED</b>	<p>Active duty military service members with a history of TBI, posttraumatic stress symptoms and related psychological health conditions receiving treatment at the National Intrepid Center of Excellence (NICoE).</p> <p>N = 370</p>
<b>TREATMENT</b>	<p>Art Therapy</p> <p>Integrated medicine, standalone treatment</p> <p>The images used for analysis were created by the SMs in the form of masks during art therapy sessions in week 1 of a 4-week integrative treatment program.</p>
<b>STUDY DESIGN</b>	ANCOVA & correlational analysis of data on clinical symptoms of posttraumatic stress, depression, and anxiety compared with visual themes in mask imagery.
<b>METHODS AND MEASURES</b>	<p>Associations between scores on the PTSD Checklist–Military (PCL-M), the Patient Health Questionnaire-9, and the Generalized Anxiety Disorder 7-item scale and visual themes in depictions of aspects of individual identity (psychological injury, military symbols, military identity and visual metaphors).</p> <p>Measures: Themes in masks, PTSD Checklist–Military (PCL-M), Patient Health Questionnaire-9, Generalized Anxiety Disorder 7-item scale</p>
<b>STATUS</b>	The manuscript is completed and is undergoing an internal review at WRNMMC prior to submission.

<b>STUDY NAME</b>	<b>Active-duty military service members' visual representations of PTSD and TBI in masks</b>
<b>AUTHORS/RESEARCH TEAM</b>	Melissa S. Walker, Girija Kaimal, Adele M. L. Gonzaga, Katherine A. Myers-Coffman, Thomas J. DeGraba
<b>ABSTRACT</b>	Active-duty military service members have a significant risk of sustaining physical and psychological trauma resulting in traumatic brain injury (TBI) and post-traumatic stress disorder (PTSD). Within an interdisciplinary treatment approach at the National Intrepid Center of Excellence, service members participated in mask making during art therapy sessions. This study presents an analysis of the mask-making experiences of service members (n = 370) with persistent symptoms from combat-and mission-related TBI, PTSD, and other concurrent mood issues. Data sources included mask images and therapist notes collected over a five-year period. The data were coded and analyzed using grounded theory methods. Findings indicated that mask making offered visual representations of the self related to individual personhood, relationships, community, and society. Imagery themes referenced the injury, relational supports/losses, identity transitions/questions, cultural metaphors, existential reflections, and conflicted sense of self. These visual insights provided an increased understanding of the experiences of service members, facilitating their recovery.
<b>POPULATION STUDIED</b>	Active duty service members N = 370
<b>TREATMENT</b>	Art Therapy Integrated; standalone treatment  Group art therapy sessions in week 1 of 4-week program medicine.
<b>STUDY DESIGN</b>	Grounded theory study, thematic analysis
<b>METHODS AND MEASURES</b>	Grounded theory analysis of content in masks and clinical notes created by art therapist.  Measures: Images and clinical notes
<b>STATUS</b>	This study is complete and the full citation is:  Walker, M., Kaimal, G. Myers-Coffman, K., Gonzaga, A.M.L., & DeGraba, T. J. (2017). Active duty military service members' visual representations of PTSD and TBI in masks. <i>International Journal of Qualitative Studies on Health and Well-being</i> . 12: 1, 1267317. Doi: 10.1080/17482631.2016.1267317

<b>STUDY NAME</b>	<b>Art therapy for PTSD and TBI: A senior active duty military service member’s therapeutic journey</b>
<b>AUTHORS/RESEARCH TEAM</b>	Melissa S. Walker, Girija Kaimal, Robert Koffman, Thomas J. DeGraba
<b>ABSTRACT</b>	Art therapy is increasingly being accepted as a form of complementary and integrative care for military veterans affected by trauma and injuries in the line of duty. Less is known, however, about the applications of art therapy for co-morbid traumatic brain injury (TBI) and post-traumatic stress disorder (PTSD). In addition, most studies to date have focused on art therapy with veterans (former military service members) rather than with active duty service members. Furthermore, there are no studies that have examined the unique context of PTSD in senior military personnel. This case study presents the therapeutic process through art therapy in the case of a senior active duty military service member (with chronic PTSD and TBI) in the context of an integrated model of care that included medical and complementary therapies.
<b>POPULATION STUDIED</b>	Senior active duty military service member N = 1
<b>TREATMENT</b>	Art Therapy Integrated medicine, standalone treatment  The patient underwent a series of treatments, including complementary and integrative therapies, and medical and psychiatric care.
<b>STUDY DESIGN</b>	Case study
<b>METHODS AND MEASURES</b>	Case analysis based on images and clinical notes  Measures: Images and clinical notes
<b>STATUS</b>	This study is complete and the full citation is:  Walker, M., Kaimal, G. Koffman, R., & DeGraba, T. J. (2016). Art therapy for PTSD and TBI: A senior active duty military service member’s therapeutic journey. <i>The Arts in Psychotherapy</i> 49(2): 10-16. Doi: 10.1016/j.aip.2016.05.015



<b>STUDY NAME</b>	<b>Using clinical notes to track changes in art therapy using Linguistic Inquiry and Word Count (LIWC)</b>
<b>AUTHORS/RESEARCH TEAM</b>	Girija Kaimal, Melissa Walker, Rebekka Dieterich-Hartwell
<b>ABSTRACT</b>	<p>This brief report presents a text analysis of clinical notes from mask making (n=198) and montage making sessions (n=198). These sessions were offered as part of an integrative model of art therapy treatment for service members with posttraumatic stress disorder and/or traumatic brain injuries at the National Intrepid Center of Excellence (NICoE). Using the Linguistic Inquiry and Word Count (LIWC), a computerized text analysis program that counts words in psychologically significant groups, the clinical notes were analyzed and compared. Results indicated statistically significant changes in a number of categories defined in LIWC, including analytical thinking, clout, authenticity, emotional tone, and a variety of psychological processes. The study findings indicate that although clinical notes formats are specific to a clinician, and represent a third person report of the sessions, they can be a valuable data source for tracking changes in patient groups over time.</p> <p>This brief report sought to explore the usefulness of clinical notes as a data source to assess aggregate changes in participants. In this case we used clinical notes generated from art therapy sessions. The findings of this brief report suggest that, based on LIWC analyses of clinical notes, SMs underwent a number of changes between the mask making sessions that occurred in week one of a four-week art therapy curriculum and a montage painting session in week four. While analytical thinking was higher initially, it had decreased by the third session. On the other hand, clout, authenticity, and tone increased in the same time frame. It is possible that the participants began to feel less reserved and more comfortable through the art therapy process and the media used. Affective processes changed as well over the course of two weeks, with an increase in positive emotions and a decrease in negative emotions. More specifically, references to both anxiety and sadness declined significantly. These findings are congruent with the suggestion of having established greater ease through the ongoing art therapy process. Interestingly, there was no noticeable change in the references to anger.</p>
<b>POPULATION STUDIED</b>	Service members with posttraumatic stress disorder and/or traumatic brain injuries at the National Intrepid Center of Excellence (NICoE) N = 198
<b>TREATMENT</b>	Art Therapy Integrated Group art therapy sessions consist of a four-week curriculum of two hour sessions each.
<b>STUDY DESIGN</b>	Pre post design examining changes over time. Analysis conducted using paired samples t-tests
<b>METHODS AND MEASURES</b>	Comparison of LIWC categories based on clinical notes of mask making sessions (week one and four) and montage painting (week four)  Measures: LIWC summaries of clinical notes
<b>STATUS</b>	The manuscript is in preparation.

**CREATIVE FORCES – THERAPEUTIC/EXPRESSIVE WRITING STUDIES**

<b>STUDY NAME</b>	<b>Using human and Linguistic Inquiry and Word Count text analysis of clinical notes to understand military service members' experiences with therapeutic writing</b>
<b>AUTHORS/RESEARCH TEAM</b>	Bronwen M. Landless, Melissa S. Walker, Girija Kaimal
<b>ABSTRACT</b>	<p>Therapeutic writing interventions have been shown to improve both physical health and emotional well-being. This brief report examines the usefulness of clinical notes as a data source and presents two different analyses of individual clinical notes of therapeutic writing group sessions: analyses performed by a person and by a computer-based program, Linguistic Inquiry and Word Count (LIWC). The therapeutic writing sessions were offered at the National Intrepid Center of Excellence (NICoE) as part of an integrative treatment model for service members (SMs) with posttraumatic stress disorder and traumatic brain injuries.</p> <p>Overall, SMs reported more positive than negative, neutral, or mixed emotions during and after the therapeutic writing experience. Some reported a change from negative to positive emotions through the writing process, and many described the experience of relief during and after sessions. SMs wrote on a wide range of topics. Most SMs kept their writing pieces, although some destroyed them, and a few others gifted them. LIWC analysis indicated that work and social were the most prominent content theme areas. It also showed that positive emotions were more evident than negative emotions in the clinical notes and that the focus of the notes was primarily on the present rather than on the past or the future. Many SMs perceived the therapeutic writing experience as therapeutic, a relevant coping skill, and enjoyable. Some, however, preferred to work on art projects such as mask making during the writing sessions. The LIWC analysis of the clinical notes took much less time than the human analysis, but it did not produce results of comparable richness or nuance. LIWC analysis of the actual therapeutic writing pieces may provide deeper insights into the content and themes that emerged during this therapeutic intervention.</p>
<b>POPULATION STUDIED</b>	Service members with posttraumatic stress disorder and/or traumatic brain injuries at the National Intrepid Center of Excellence (NICoE) N=200
<b>TREATMENT</b>	<p>Therapeutic/Expressive Writing</p> <p>Integrated, standalone treatment</p> <p>Therapeutic writing sessions were implemented and documented by the art therapist and art therapy interns at the NICoE.</p>
<b>STUDY DESIGN</b>	Thematic analysis
<b>METHODS AND MEASURES</b>	<p>Clinical notes were created from SM self-report surveys and clinician observations from May 2012 to 2015 and were coded manually for emerging themes, and separately analyzed by LIWC, a computer software text content analysis program.</p> <p>Measures: Clinical notes, tallies of qualitative themes generated through LIWC</p>
<b>STATUS</b>	Manuscript completed the internal review at WRNMMC and is in pre-submission status.