CREATIVE FORCES

NEA MILITARY HEALING ARTS NETWORK

Summary Report from the Creative Forces Clinical Research Summit

This summary report was written by Sarah Pitcock for Creative Forces: NEA Military Healing Arts Network, an initiative of the National Endowment for the Arts in partnership with the Departments of Defense and Veterans Affairs, and the state arts agencies. Americans for the Arts is working with the NEA to provide administrative support for Creative Forces.

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Table of Contents

Full Meeting Report

I. Creative Forces National Program Summary 1

II. Summary of Event 2

III. Summary of Panel Discussions and Keynote Presentations 3

IV. Summary of Recommendations for Next Steps 16

ABBREVIATIONS USED IN THIS REPORT:

DoD ..... Department of Defense

NEA ..... National Endowment for the Arts

The NICoE ..... National Intrepid Center of Excellence

PTSD ..... Post-Traumatic Stress Disorder

TBI ..... Traumatic Brain Injury

MEG ..... Magnetoencephalography

RCT ..... Randomized Controlled Trial

NOTE:
The presentations of the invited speakers are the views of the author alone and do not reflect the views of the NEA, DoD, or the U.S. government.

I. Creative Forces national program summary

Creative Forces: NEA Military Healing Arts Network serves the unique and special needs of military service members and veterans who have been diagnosed with traumatic brain injury (TBI) and psychological health conditions, to include post-traumatic stress disorder (PTSD), as well as their families and caregivers.

Made possible by a unique collaboration between the National Endowment for the Arts, the Departments of Defense and Veterans Affairs, and state arts agencies, Creative Forces is a network of caring people who believe in the transformative and restorative powers of art. This national network cares for our injured service members, whether they are active duty or veterans, in medical treatment or transitioning back home to their bases and communities.

The program has three components: Creative Forces places **creative arts therapies** at the core of patient-centered care in military medical facilities, as well as a telehealth program for patients in rural and remote areas; provides increased **community-based arts** opportunities for military and veteran family populations around clinical site locations; and invests in **capacity-building efforts**, including the development of manuals, training, and research on the impacts and benefits of the treatment methods.

The Creative Forces collaboration began in 2012 at the National Intrepid Center of Excellence/Walter Reed National Military Medical Center (the NICoE). Congressional support enabled the National Endowment for the Arts to expand the partnership in 2017 to 11 DoD and VA clinical sites, and a telehealth program for patients in rural and remote areas.

II. Summary of event

A core aim of Creative Forces' clinical research efforts is to improve understanding of the biological, psychological, behavioral, and economic impacts of creative arts therapies in integrative care settings for patients with TBI and PTSD. In support of that aim, the summit convened researchers and practitioners to inventory current research and initiatives and discuss opportunities to advance Creative Forces through future research priorities.

The summit kicked off with a breakfast hosted by Second Lady Karen Pence at the Vice President's residence. Mrs. Pence is working to bring national awareness to the impacts of art therapy and applauded the efforts of Creative Forces in helping to advance this work via her initiative, "Healing with the HeART."

The official program opened with welcoming remarks from Tom Rudin, director of the Board on Higher Education and Workforce at the summit's host site, the National Academy of Sciences. Rudin remarked on the importance of collaboration between the arts and sciences to solve our nation's most pressing problems. National Endowment for the Arts Chairman Jane Chu reflected on the importance of creative arts therapies and the evolution and rapid growth of Creative Forces since NEA and DoD established the Healing Arts Partnership at the NICoE in 2011. Walter Reed Director Capt. Mark Kobelja issued the call to action for participants: Be bold in building the science of creative arts therapies.

The summit was co-chaired by Sunil Iyengar (NEA) and Thomas DeGraba (DoD) and was rooted in four panels, one each on dance/movement therapy, music therapy, therapeutic writing, and art therapy. Each panel reported on current Creative Forces research in these corresponding disciplines, gave an overview of the status of associated research within these broader fields, and discussed implications for the future of the Creative Forces clinical research agenda. Four complementary keynote talks were meant to provoke insights from disciplines or fields not directly related to those of the Creative Forces team. The summit closed with a dialogue among participants around future research priorities for Creative Forces.

Prior to the summit, the NEA engaged the company ProgramWorks to perform a research synthesis and gap analysis by reviewing extant research and interviewing several authorities. Findings and recommendations from that document—and from the summit itself—will inform a comprehensive report in early 2018.

III. Summary of panel discussions and keynote presentations

A listing of professional title and affiliation for each speaker can be found in Appendix A.

Creative Forces Clinical Research Overview

- **Summary of Creative Forces clinical programs (Capt. (ret) Sara Kass)**

Sara Kass, Creative Force's senior military and medical advisor and former director of the NICoE at Walter Reed, provides an overview of Creative Forces clinical programs. Photo by Yassine El Mansouri

The summit began with an overview of Creative Forces clinical programs provided by Sara Kass, Creative Force's senior military and medical advisor and former director of the NICoE at Walter Reed. "More than 500,000 men and women who have served or are serving in the military are confronting invisible wounds of war, and that number grows every day. We've found an unexpected way to heal these wounds: art, music, dance, and writing," said Kass.

Creative Forces integrates creative arts therapies into an interdisciplinary care program for service members. Kass described the differences therapists see in service members from the beginning to the end of their intensive outpatient treatment. She referred to physical, emotional, and economic benefits for military families and communities, civilians, and society at large.

Creative Forces has grown from one program in 2012 to a network of 21 creative arts therapists supported by the NEA, DoD, and VA across the country. Creative Forces now serves both active-duty and veteran service members and is developing a pathway from the clinic to the community setting, potentially enabling a lifetime of health and wellness for this population. Kass announced plans to hold summits, over the next ten months, in each state where there is a Creative Forces clinical site to help build local clinic-to-community collaboration. She is also focused on building the capacity of therapists in this network, and creating a digital platform for data collection and knowledge-sharing across all clinical platforms.

- **Highlights from the research synthesis report (Patricia Moore Shaffer)**

Shaffer previewed a research synthesis commissioned by Creative Forces. The report draws from diverse research literature and from completed Creative Forces studies. The report also included interviews with subject matter experts. Together, these sources help to establish a knowledge base

and identify areas of focus for Creative Forces research and for the study of creative arts therapies in general.

Surveying extant research, the report describes several gaps or challenges in the current research on creative arts therapies, including the diverse nature of creative arts therapies; the variable status of creative arts therapy research; the complexities of the populations served by Creative Forces; evidence for the unique contributions of creative arts therapies as part of an integrative medicine approach; and the significant gap that exists between knowledge of the clinical practices of creative arts therapies and knowledge of effective research practices.

Summarizing the report, Shaffer recommended two next steps for the Creative Forces team. First, to enable comparisons and replication across sites, researchers and practitioners should establish research priorities based on the research gap-analysis and the detailed findings from the synthesis. Second, specific areas of focus for a Creative Forces creative arts therapy research agenda should be identified.

- **Highlights from the evaluation toolkit (Joke Bradt)**

In keeping with the report's recommendation to document creative arts therapy approaches, the Creative Forces evaluation toolkit is an important step in standardizing creative arts therapies interventions and evaluation methods across sites. Through support from the NEA, Bradt and colleagues from Drexel University have developed evaluation protocols and guidelines based on clinicians' input, an extensive program evaluation conducted for Creative Forces in 2015, and ongoing secondary analyses of clinical outputs. Creative Forces will train all clinicians to use the toolkit. With all sites using similar practices, the opportunities for multisite research will expand. The toolkit includes:

- Post-session evaluation forms for groups and individuals to help assess the impact of one or more sessions;
- Pre- and post-session rating scales and standardized measurement tools for symptom areas such as fatigue, pain, energy level, emotional distress, and social participation;
- Archiving guidelines to help therapists store and preserve art and songs for later secondary analysis; and
- Guidelines for administering tools and for summarizing and analyzing data.

The evaluation toolkit will assist therapists and other internal stakeholders to understand whether or not a program is working as intended. While evaluation plays an important role in creating a good research agenda, Bradt cautioned, "We cannot get stuck at program evaluation and secondary analysis. We must move to exploring ways to examine efficacy and effectiveness."

- **Overview of physiological measurement tools and data collection capabilities (Thomas J. DeGraba)**

Expanding on the behavioral changes that creative arts therapists often strive to measure, Chief Innovations

> For example, during the four-week Intensive Outpatient Program (IOP) at the NICoE, review of clinical assessment reveals restoration of cerebral blood flow from an abnormal to normal range in many service members that is attributed to the utilization of the creative arts therapies and other activities such as breathing exercises, yoga, and movement.
>
> —Thomas J. DeGraba, chief innovations officer at the NICoE

Officer at the NICoE DeGraba's presentation focused on the "unseen" physiological and biological effects of TBI and PTSD. Long-term exposure to threats causes our sympathetic nervous system to ramp up and stay that way, causing an autonomic imbalance—which may be used to track the disruption of wellness in a service member. Trauma we can't "see" through behavioral assessments or self-reported measures can be made visible with neuro-imaging, autonomics, electrophysiology, cerebral blood flow, genomics, proteomics, combat exposure, and triggers. These unseen quantifiable markers are new ways to describe the benefits of creative arts therapies and are beginning to be used in research across the NICoE network. For example, during the four-week Intensive Outpatient Program (IOP) at the NICoE, review of clinical assessment reveals restoration of cerebral blood flow from an abnormal to normal range in many service members that is attributed to the utilization of the creative arts therapies and other activities such as breathing exercises, yoga, and movement.

DeGraba also spoke of the capabilities of imaging such as magnetoencephalography (MEG) to help assess brain connections often lost as a result of head trauma. Disturbances in brain wave patterns associated with PTSD as well as with specific tasks such as picture naming have been identified in service members with a history of TBI and PTSD. Creative arts therapy is being studied as a strategy for aiding in the recovery of normal patterns. Finally, DeGraba discussed genomic expression as a potential marker for wellness, and how creative arts therapists and researchers are beginning to see an association in emerging patterns of alteration in genes being "turned on" and "turned off" as a response to using creative art therapies, meditation, and other mind-body techniques.

"Having a network throughout the military health system is critical to understanding these physiological parameters that will help with implementing standardized integrated medicine techniques and outcome measures throughout the system," he said.

Keynote presentation by Bessel van der Kolk on the impacts of traumatic stress on mind, body, and society. Photo by Yassine El Mansouri

Keynote #1

Impacts of traumatic stress on mind, body, and society (Bessel A. van der Kolk)

Extending DeGraba's look at "unseen" physiological and biological changes stemming from TBI and PTSD, van der Kolk elaborated on the traumatized brain and the role of creative arts therapies. "When you get traumatized, the reward system in your brain changes," he said. Instead of being interested in daily life, service members are rigidly stuck in the past because their dorsolateral prefrontal cortex (a sort of neurological timekeeper) is offline. A major disturbance in the amygdala of a traumatized person keeps them in "fight mode," constantly reactivating the brain for danger and affecting basic functions such as appetite, breathing, and sleeping. Because PTSD causes the left brain to shut down, service members may find

themselves unable to find words to describe memories or emotions. These factors make it difficult for service members to connect with the civilian population.

Van der Kolk posed the question: How can we help people to reactivate the reward system so they feel pleasure in the moment? Dr. Van der Kolk postulates that creative arts therapies can help unwire people from war by giving the body a new identity and bringing back imagination and creativity. He believes that "Our job is to help people to learn new experiences and to be in the present and not to revisit the past over and over again, which may have been the last time that they felt alive," he said. Art -making activates the medial prefrontal cortex or introspective part of the brain–the only part that gives access to the emotional brain.

> "Our job is to help people to learn new experiences and to be in the present and not to revisit the past over and over again, which may have been the last time that they felt alive," he said.
>
> —Bessel A. van der Kolk, medical director, Trauma Center at Justice Resource Institute

"We learned to take pictures of people's brains. We learn a lot from the pictures, but art therapists learn as much as neuroscientists through writing down very carefully what they see and do," van der Kolk remarked. He said the ultimate measure of success is that people are able to function and love their families. He offered the following methods to overcome trauma: re-establish community; engage in effective action, enable the movement part of the brain to gain a sense of competence and strength; and deal with affect regulation. "Learning how to be still is the most important predictor of whether people get better," he said.

Panelists from the spotlight on art therapy (l-r): Bill O'Brien, Girija Kaimal, Paula Howie, Sarah Deaver, Melissa Walker, Jacqueline Jones, Tom DeGraba, and Sunil Iyengar. Photo by Yassine El Mansouri

Spotlight on Art Therapy

▪ Melissa Walker

Walker runs an art therapy program that is an integral component of the behavioral health and treatment of an intensive four-week outpatient program for active-duty service members at the NICoE. She discussed a peer-reviewed case study of a high-ranking, active-duty service member with more than 20 years of service. During deployment, he was hit by a mortar blast, crawled into a bunker and awoke to see a bloody face staring at him. Because of a reduction in activity in the speech-language area of his brain, he silently carried this face in his memory for seven years, having flashbacks day and night. He received music therapy, acupuncture, psychiatry, and neuroimaging as well as art therapy, but he had a breakthrough by making a mask. He created a mask of "BFIB"

(bloody face in bunker), and put "him" in a box to contain him. The service member painted the inside yellow to show he was shedding light on what BFIB symbolizes, and also used magazine clippings to portray that he felt BFIB was "frozen in time," which mirrors the nature of trauma in the brain. The service member collaged phrases on the outside of the box to portray his ability to open up and "start fresh."

"He took this frozen image in his mind, part of his psyche, and he was able to externalize it and understand it and let it go," she said.

Many service members leave their art behind to inspire the next round of people, some of whom may be from the same unit or same job, making them feel safe to engage in this process. Walker also returns to the artwork time and time again, taking clinical notes from every encounter and incorporating them into secondary analysis of themes and outcomes. "A lot of meaning comes out of these sessions," she said. With these clinical notes and in collaboration with Drexel University's Creative Art Therapies Ph.D. program and the NEA, Walker has been able to publish the outcomes of the the NICoE art therapy program with the help of her main Drexel University research partner, Girija Kaimal.

- **Girija Kaimal**

Kaimal has used such data to learn more about the process and outcomes of art therapy. Over two years, she reviewed archived images of art, clinical notes, and evaluation feedback forms collected by the clinicians at the NICoE and Fort Belvoir through the Creative Forces art therapy program. More than 1,000 masks have been archived in a database that matches a service member's unique identifier with his or her art, standardized clinical measures (e.g., Levels of PTSD, depression, anxiety etc.) as well as clinical notes. Across 370 masks reviewed, Kaimal and her research team found that service members represented themselves in a range of ways. Most often, service members depicted themselves as individuals by focusing on an issue they had struggled with or one that was particularly meaningful for them and had weighed heavily on their minds. Their masks evolved over time to focus on relationships, community, society, and themselves. Data showed that:

- Those who identified a military unit in their art had lower PTSD and depression, likely demonstrating the protective factors of community and belonging.
- Use of fragmented elements to represent emotions was related to higher levels of anxiety.
- Use of cultural symbols and characters in art was associated with lower depression.

When shifting from masks to montage paintings, Kaimal and team found that references to injuries went down dramatically; nature metaphors were stronger; and memories of deployment grew in number. She hypothesized that these shifts could stem from the change of the artistic medium or from the fact that montage-painting occurs in week four, toward the end of the service member's treatment at the NICoE.

Kaimal recommended that all Creative Forces sites archive their art to enable more research of this type. She also suggested that all sites have a liaison to help researchers gain the permissions and access they need. Finally, she encouraged a look at family outcomes and pushed for multisite database analysis across the ten Creative Forces sites that host art therapy programs.

- **Jacqueline Jones**

Jones is replicating and adapting the art therapy program initiated at the NICoE/Walter Reed for the outpatient setting at Fort Belvoir into a three-stage process. She shared a case study of a service member named "J."

J is a 27-year-old active duty Marine Corps Sergeant. During his first deployment, three explosions went off at close range, and he stepped on an improvised explosive device. He was redeployed to the same area and was shot in a firefight, though didn't recall it later. His only memory was of his best friend dying in front of him, for which he blamed himself. J was diagnosed with PTSD and TBI. In his first level of creative arts therapies, themes of his art were dark, about fear and isolation and not being able to relate to others. In level two, his art expressed his fear of getting close to anyone but also the comfort of family, and pride in his career and comrades. The graphic-narrative technique enabled him to process anger and sadness, and ultimately, the underlying traumatic event where his best friend died, thus unlocking the memory that he, too, had been injured and that he did in fact try to save his friend.

"He was able to develop empathy for himself because he realized how much he experienced in such a short amount of time without the opportunity to grieve or process. He was also able to tell his wife about his story. That helped him get permission to engage with life again," Jones said.

J's artwork gradually became more colorful and demonstrated that even when you lose someone, you're still connected. Jones has observed that a majority of service members report improved sense of self, ability to experience positive emotions, and "taking an interest in activities" upon completing their therapies.

- **Paula Howie**

Howie gave a historical perspective of art therapy and associated research, and she voiced her aspirations for the future. During her time as an art therapist at Walter Reed from 1977 to 2002, the military medical center went from two to eight creative arts therapists. In 1990, Walter Reed brought together 22 horticultural and recreations therapies under the banner of activities therapy. High ratings from service members and lower rates of depression helped to fuel growth of the programs.

Howie, who served as president of the Art Therapy Association from 2005-2007, went on to describe struggles to secure funding for multisite research in the decade after she left Walter Reed. "We all want to make sure that art therapy is part of the multisystem approach to the treatment of combat service members suffering from different forms of trauma. I hope we can keep this up, get more funding and more people in more places to work. The future is in evidence-based and evidence-supported work," she said.

- **Sarah Deaver**

Deaver described a 2013 Delphi study conducted by Kaiser and Deaver that surveyed art therapy researchers on future directions for the field. Of the 45 researchers invited to participate, 16 completed all three rounds of the study. Respondents recommended randomized-controlled trial (RCT) studies, and using experimental and quasi-experimental methods to advance the field. They also recommended that studies focus on art therapy's impact on people with trauma and complex trauma, asking questions such as: How does art therapy inform therapeutic change? How do art therapy outcomes compare to other treatments such as verbal therapy?

Deaver reflected that conducting multisite RCTs presents tremendous obstacles for Creative Forces, in light of the differing programming at various Creative Forces sites and the need for approvals from multiple IRBs. She suggested starting with single-subject designs across the Creative Forces sites, equipping each art therapist to conduct individual case studies using consistent methodologies and outcome measures. She conceded that although single subject research using consistent outcome measures would yield data regarding changes in PTSD symptoms such as depression and dissociation, they would fail to inform researchers and practitioners of what about art therapy may have precipitated those changes. Deaver recommended adding a qualitative approach such as post-

treatment interviews to shed light on service members' experiences with art therapy that may have contributed to positive change.

Spotlight on Creative and Expressive Writing as Therapy

- **Bill O'Brien**

O'Brien kicked off the panel with a look back at Creative Forces' roots in writing. Creative Forces began in 2004 as an arts-engagement opportunity called Operation Homecoming. During the project, writers worked with service members on deployment to share war stories more broadly with the public. The Operation Homecoming book came out in 2008 as a series of writings from service members and their family. An unintended benefit of the project was the therapeutic aspect of writing and sharing as expressed by participating service members, whether or not their stories were even published. Eventually, expressive therapeutic writing was incorporated into Creative Forces. "As we listened to our patients, we started to notice that many wanted to explore other themes, not just their trauma as had been the focus of most psychology-based clinical expressive writing experiments we reviewed from the past. Its cathartic value was expressed across a variety of themes, both positive and negative—allowing for an arts-based meaning-making that could bring intellectual clarity to emotional chaos and catalyze desired life-course correction," O'Brien said.

Panel on creative and expressive writing as therapy (l-r): Bill O'Brien, Rita Charon, Girija Kaimal. Photo by Yassine El Mansouri

- **Melissa Walker**

As part of the integrated medicine program at the the NICoE, the art therapists see service members once a week for a 15-minute writing session. Service members choose the topic and whether they share their writing or keep it private. At the end of each writing session, service members take a survey asking them the theme they wrote on, the tone of the work, how they felt while they were writing, what they chose to do with it, and how they felt after writing. In the second week, they are invited to a creative-writing workshop where they are given writing prompts and invited to share their work, creating a story-telling setting which helps to enable a strong sense of community among the service members.

- **Girija Kaimal**

Similar to the review of masks and montage paintings, Kaimal and her research team examined clinical notes compiled by the art therapist conducting therapeutic writing. In this study, she used both human and computer analysis of the text of clinical notes. Human analysis found that service members mostly wrote about relationships, a finding counter to mask-making, in which case service members mostly expressed things about themselves as individuals. Other themes included references to the military, the government, and managing emotions. The computer text analysis of the clinical notes showed that references to affective processes went up from week one to four, as did references to positive emotion.

Kaimal expressed a need for longer narratives and studies that compare themes from writing activities with creative arts therapies and assess differences between therapeutic and creative writing. She hopes to eventually have a first-person writing sample from each week in treatment, but she acknowledged that service members may not be as candid if they know their work is being collected and therefore may not benefit as much from the exercise.

- **Rita Charon**

Using her background as both an internist and an English scholar, Charon began a program in narrative medicine at the Columbia University Medical School to equip clinicians, patients, and families with sophisticated narrative skills. Such listening, writing, and translation skills allow patients to tell their histories, which then can be documented by students and physicians and used in providing care. Charon lamented the lack of research on the benefits of writing, but she offered several applicable theoretical frameworks that can be used to foster recognition of writing (including narrative theory) as a form of treatment.

Charon recommended discussing a writing prompt as a group to provide some common understanding prior to writing. "Typically we start with a work of art, usually a poem or paragraph from a novel. We all zoom in on this thing, and then at the end of that, students have a vocabulary to see [or] perceive. Then, the writing becomes not an answer to an essay question, but very associative and community-oriented." Charon said the writing program at Columbia has increased teamwork and decreased burn-out among participating clinicians.

Spotlight on Dance/Movement Therapy (DMT)

"Healing is about creativity and movement, and that's what dance is." – CAPT. Moira McGuire, division chief of Ancillary Services, Internal Medicine clinic, Walter Reed National Military Medical Center.

- **Allison F. Winters**

Winters opened by describing three techniques used in dance/movement therapy:

- Empathic movement, where the therapist is supporting, intervening in, and challenging the individual to overcome fear; "One time, [a service member] came part way into the room and stopped. He started to tell me about his first guided meditation; it made him feel like he wanted to cry. He didn't want to move because he didn't want to cry. So, I met him at that place of resistance," Winters said of one participant in dance therapy.

Summit attendees take part in an exercise during the dance/movement therapy panel. Photo by Yassine El Mansouri

- Use of imagery or reminiscence, which allows for a progression from a sensory experience to a symbolic one; and
- Authentic movement, or moving from inner impulse, directed by the patient with the therapist/group as a non-critical witness.

The mind-body wellness component of the the NICoE 4-week intensive outpatient program includes 12 groups and two individual sessions that help the service member to progressively build mind-body skills through a foundation of dance/movement therapy. At the outset, service members learn how to practice diaphragmatic breathing and how to use an emWave, an advanced heart rhythm monitor, to assess heart-rate variability and to monitor wellness. The first week ends with movement, music, and meditation therapy. An important component of Week 2 is learning the concept of sequencing movement and using breath to move through transitions with greater ease and flow. Week three supports the service members to begin making a wellness plan for their return home. Week four wraps up with Creativity and Closure, an opportunity for service members to compare where they were at the beginning of the program and where they are now to bring some closure to their experience at the the NICoE – mind, body, and spirit.

Based on a self-report survey in weeks one and three, Winters observed that service members show an average increase in both mind-body awareness and confidence with mind-body practices. Winters closed by sharing that a six-month pilot dance therapy program at the NICoE is forthcoming.

- **Jennifer Frank Tantia**

Tantia discussed current trends and future possibilities in the broader DMT field, noting the wide array of populations reportedly benefiting from DMT, including people with autism, addictions, eating disorders, and dementia. Accordingly, Tantia described the current state of research in the DMT as deep and growing. DMT is featured in diverse peer-reviewed journals, beyond those dedicated to dance/movement therapy. Overall, there have been numerous DMT outcome studies (RCTs, meta-analyses, systematic reviews) conducted using various forms of clinical trials to demonstrate benefits. Effect sizes across those studies were comparable to studies of cognitive behavioral therapy in the 1990s, which is generally accepted as an evidence-based therapy. The reportedly positive effects of DMT include subjective well-being, and positive mood, affect, and body image.

Tantia recommended that future research focus on biological, psychological, and social aspects of DMT. "It's not just talking about or fixing a symptom. It's about integrating the patient's self-efficacy into the therapy."

Keynote #2

Applications of "flow" theory to post-traumatic growth in combat veterans (Mihaly Csikszentmihalyi)

"You sort of zone out into the mask, into the drawing. For me, it just released the block. When I looked at if after two days, my treatment just soared. For the first time in 23 years, I could talk about it." This quote came from a video clip of a service member movingly reflecting on his art therapy experience at the NICoE.

When a service member is able to "zone out" into art or music or dance, he or she is experiencing flow, which can be defined as working at your heart's content. "I wanted to understand what makes life good instead of trying to cure the illnesses of society—how to improve on what is good and make that more available to everybody," Csikszentmihalyi said. Csikszentmihalyi has spent decades interviewing people in different disciplines and roles to understand the characteristics of flow.

Achieving flow is about mastering your circumstances and taking control of your direction—a factor that can be critical for service members returning from deployment.

According to Csikszentmihalyi, the dimensions of flow include a level of concentration where action and awareness merge, typically through a constant problem-solving activity. In rock-climbing, for example, the climber is constantly computing how difficult the climb is and what the next move should be. Flow also requires freedom from worry about failure, which comes from being prepared for the task and trying to do it to the best of one's ability. In the final dimension of flow, the experience becomes its own reward.

Required conditions for achieving flow include clear goals, connected movements, immediate feedback, and a balance between challenges and skills. Csikszentmihalyi suggested that creative arts therapists will be most successful if they help service members achieve flow by striking the optimal balance between skill and challenge. As one's skills grow, more challenges are needed to get into the flow. If one has too much anxiety, then she or he must develop new skills related to the task.

Keynote presentation by Nina Kraus on pathophysiology of traumatic brain injury and auditory processing—the role of music. Photo by Yassine El Mansouri

Keynote #3

Pathophysiology of traumatic brain injury and auditory processing—the role of music (Nina Kraus)

Kraus' research focuses on sports-related injuries in college athletes, a useful analog for military trauma because young men and women are strong and fit as they enter the game prior to injury. By using an objective biologic metric for measuring injury and recovery, Kraus' research looks at long-term, intermediate, and acute outcomes, with the ultimate goal of returning athletes to play.

Kraus assesses head injury by examining auditory processing. Making sense of sound is one of the most complex jobs we ask our brain to do, and a head injury disrupts this complex machinery. Kraus examined Northwestern University football players: 25 with concussion and 25 without. She found that the brain's reaction to pitch, measured by the frequency following response (FFR), is reduced among athletes with concussion. According to Kraus, FFR is an objective, vetted, mobile, repeatable, uniform, and fast biological marker for concussion, with applications for clinicians to monitor recovery.

"Music is the jackpot for accessing our cognitive sensorimotor reward," said Kraus. Playing music reorganizes the brain, boosts hearing in noise and can help concussion recovery. Kraus is eager to scale this study to additional subjects.

Spotlight on Music Therapy

- **Rebecca Vaudreuil and Hannah Bronson**

Panel on music therapy (l-r): Wendy Magee, Joke Bradt, Hannah Bronson, Rebecca Vaudreuil. Photo by Yassine El Mansouri

Vaudreuil and Bronson described the music therapy programs at the NICoE and Fort Belvoir. The NICoE's four-week music therapy program utilizes four therapeutic tools— instrument playing, music listening for relaxation, songwriting and music production, and music psychoeducation for learning, socialization, and skill building —through group, individual, and family sessions. The program model also includes co-treatment sessions combining traditional disciplines such as physical therapy, occupational therapy, and speech and language pathology with music therapy in the same sessions. The NICoE model has been adapted for a longer-term model at the Intrepid Spirit Center at Fort Belvoir. The adapted model includes an initial assessment and referral to group or individual therapy sessions, followed by the option of music jam group sessions for interested service members. Developing protocols for replicating and adapting music therapy models across Creative Forces sites is a key priority.

Vaudreuil and Bronson emphasized the importance of opportunities for service members to make music cohesively in a group as well as perform music. Both the NICoE and Fort Belvoir have a monthly Creative Arts Café, where service members can perform together and often with other staff members, community groups, celebrity musicians, and military bands. The presenters discussed how performance provides an important opportunity for structured risk-taking and how clinicians also benefit, as participants and audience members. They closed with a video documenting a service member's success with music therapy, culminating with him singing at the Memorial Day concert at the United States Capitol lawn. "Research shows that performance provides opportunities for patients to grow in their recovery processes by exploring the boundaries of their comfort zones by engaging in structured risk taking…and we see this all the time in music therapy sessions," said Vaudreuil.

- **Joke Bradt**

Bradt opened by discussing a 2015 evaluation of the Creative Forces music therapy program. To assess the program's effectiveness, the evaluation used post-session feedback surveys, therapists' clinical notes from individual and family sessions and original songs written by service members.

Service members reported that group sessions helped them explore and express emotions, practice focused and divided attention skills, and enhance awareness of somatic responses to music, which Bradt described as important in teaching them to use music for emotional regulation. Results of individual sessions included improvements in gross and fine motor skills, the ability to relax, insights about life issues, and confidence and autonomy. Family sessions were reported to improve communication with spouse and children, enhance teamwork through joint music-making, and promote bonding through musical play. Songwriting analysis found themes of resilience, hope, and

anger. Seventy-nine percent of service members who received services requested follow-up MT sessions.

A new pilot study, funded by the Grammy Foundation and the NEA, and involving 20 service members with PTSD, will study the effects of music-listening alone compared with music-listening paired with emotional regulation therapy (ERT). The study will use functional magnetic resonance imaging (fMRI) and magnetoencephalography (MEG) to monitor brain activity as service members listen to music. All service members, regardless of whether they receive ERT after the initial scan, will return for a follow-up scan three months later to assess any increase in cortical alpha power, cortical functional connectivity, and hippocampal volume. Additional studies will examine the effects of individual music therapy on symptom management, thematic analysis of original songs written by service members, and analysis of the meaning and value of the songs they select for performance.

- **Wendy Magee**

Magee made recommendations for future music therapy-related research with military personnel. She suggested a focus on TBI because of its wide-reaching effects, including motor communication, physical cognition, depression, sleep disorders, suicidal ideations, and PTSD.

Magee summarized a number of studies examining the effects of music on the brain and focused on findings from a recent meta-analysis of music interventions for acquired brain injury. Existing research focuses on stroke and employs a range of tools and methodologies (RCT, meta-analysis, imaging, basic science, neuroscience, and qualitative studies). Outcomes of interest in music therapy studies include improved gait and quality of life, change in brain structure, and improved mood and cognitive functioning. Magee said the strongest studies use both behavioral and biological measures (such as MEG) to assess brain activity.

Magee offered a number of recommendations for future research, including a focus on music therapy studies that look for an increase in hippocampal volume, so we understand not just what works but why at an organic level. She also encouraged a focus on research designs beyond RCTs, which she said are not ideal for answering complex questions such as interventions to target symptom management, well-being, relationships, and survival. She closed with a call for stronger translation of research to practice, which could be facilitated by more user-led research models. “Patients should be informing our research. Put them at the center of research teams,” she said.

Keynote #4

Sound Health, an initiative sponsored by the National Institutes of Health and the John F. Kennedy Center for the Performing Arts, in association with the National Endowment for the Arts, to explore connections between music and the mind (Emmeline Edwards)

Sound Health seeks to answer a simple question with far-reaching implications: How can music impact health? The initiative examines the basic neuroscience of music to accelerate its clinical applications. Edwards described the unlikely genesis of Sound Health: a dinner party at the home of the late Supreme Court Justice Antonin Scalia that found NIH Director Francis Collins and music therapy advocate and renowned soprano Renée Fleming in an impromptu duet that launched their friendship and collaboration.

A January Sound Health workshop generated numerous priorities for research and practice, including a call for more basic science to break down the processing of music into fundamental elements. Translational research is needed to establish better links between music, brain circuitry, and brain mechanisms. Research also needs to examine dosage to understand how much therapy is needed, how often, and for whom. Edwards encouraged making individual cases for each creative arts therapy

to understand why one therapy may be preferred over another in specific situations. To strengthen the methodological approach, Edwards said the field must move beyond small sample sizes to large-scale and multisite RCTs. She would welcome the introduction of a training award to help clinicians better understand evidence-based practice. Edwards shared that the workshop has resulted in the formation of the Music and the Brain Research Network—an informal group of researchers and practitioners prepared to advance critical research for the field.

Edwards closed with a reflection on the importance of having champions such as Collins and Fleming, whom she credits with catalyzing this effort. "This is not our day job. Everyone is doing this out of interest and excitement for the field, and they are right there with us," she said.

Keynote presentation by Emmeline Edwards on Sound Health—an initiative exploring connections between music and the mind sponsored by the National Institutes of Health and the John F. Kennedy Center for the Performing Arts, in association with the NEA. Photo by Yassine El Mansouri

IV. Summary of preliminary recommendations for next steps

The summit closed with a recap of research recommendations made throughout the two-day session, as presented by summit co-chair Sunil Iyengar. Next, participants offered their own closing reflections and recommendations.

One theme included the tension between the need for more rigorous evaluations of impact and the need for data and studies on program implementation. While many participants spoke of the merits of single-subject studies to understand whether and how a therapy is working, many others spoke of the need for RCTs to gain credibility for creative arts therapies in the medical community. Participants generally agreed there is a need for both, though the creative arts therapy field might not be ready for large-scale RCT. For starters, Creative Forces can pilot quasi-experimental and experimental studies, maximize within-site evaluations, and use standard protocols and measures.

Recommendations for the Creative Forces research agenda included:

- **Incorporate user-centered approaches and quality-of-life measures**—including functional measures, such as a service member's ability to get a job and to reintegrate into a community. "The things the vets say are most beneficial are the things we can't measure. We as researchers need not only a user-centered approach but a practitioner-centered approach," said participant Alisha Ali of New York University. Participants also called for a longitudinal approach to measuring quality-of-life benefits over time.
- **Identify and use common data elements and standard measures** to aid in comparability across sites and modalities. Participants described many existing and validated measures, including the National Center for Complementary and Integrative Health's Clinical Research Toolkit and NIH Toolbox. It's important to choose outcome measures that are authentic to the creative arts therapy being studied but that can also differentiate its benefits more clearly from those of other types of therapies or interventions.
- **Study individual therapies:** Establish research questions for each creative arts therapy. Each study should strive to understand behavioral and biological outcomes and mechanisms of action. Importantly, studies should fully document the medical, military, and creative histories of patients before, during, and after intervention, as well as the actual treatment protocol.
- **Study how therapies work together:** How do creative arts therapies work together and in relation to other integrated therapies? How should they be sequenced and combined? Make use of interdisciplinary models such as the NICoE's ability to study the benefits of combined therapies.

Finally, the conversation shifted to funding—how to pay for creative arts therapies and an associated research infrastructure. Participants discussed possible partnerships with other non-creative arts therapies disciplines such as physical therapy, speech pathology, audiology, and psychology to broaden the pool of available funding and partnerships. Participants also discussed barriers to insurance coverage for treatment and the need to standardize how therapies are coded to allow for better tracking and comparability.

The summit closed with participants singing the National Anthem. Photo by Yassine El Mansouri

Next steps

Findings from the Sept. 18-19 research summit will inform an October 2017 workshop involving the Creative Forces management team and its consultants at ProgramWorks. These inputs, along with the research synthesis and gap-analysis presented on Sept. 18, 2017, will be used to generate a strategic framework and five-year agenda for all clinical research projects associated with Creative Forces. A comprehensive report of this plan will appear in early 2018 .

> "**[In the Military Health System]** Service member readiness is our main mission. We strive to improve their mind, body, and spirit and bring them back to the people they want to be in their jobs, families, and communities. When people think of health care systems, we hope they think beyond the operating rooms and conventional medical departments. Through the arts, we can harness our innate ability to advance our own care and resilience and be an integral part of medical health care in this country."
>
> —Thomas J. DeGraba, chief innovations officer at the NICoE

APPENDIX A: SPEAKERS

Joke Bradt, associate professor, Department of Creative Arts Therapies, Drexel University

Hannah Bronson, Creative Forces music therapist, Intrepid Spirit Center, Fort Hood

Rita Charon, professor of medicine, Columbia University

Mihaly Csikszentmihalyi, professor of psychology and management, Claremont Graduate University

Sarah Deaver, professor, Eastern Virginia School of Medicine; American Art Therapy Association

Thomas J. DeGraba, chief innovations officer, the NICoE

Emmeline Edwards, director of the Division of Extramural Research, National Center for Complementary and Integrative Health

Paula Howie, registered art therapist and lecturer

Jacqueline Jones, creative arts therapist, Intrepid Spirit Center, Fort Belvoir

Girija Kaimal, assistant professor, Drexel University

Sara Kass, senior military and medical advisor, Creative Forces

Nina Kraus, Knowles Professor, Northwestern University, communication sciences, neurobiology, and otolaryngology

Sunil Iyengar, director, NEA Office of Research and Analysis

Wendy Magee, professor, Boyer College of Music and Dance, Temple University

Moira McGuire, division chief of Ancillary Services, Internal Medicine clinic, Walter Reed National Military Medical Center

Bill O'Brien, senior advisor for innovation at the NEA and Creative Forces Project Director

Patricia Moore Shaffer, deputy director, NEA Office of Research and Analysis

Jennifer Frank Tantia, research faculty, Lesley University; research and practice chair, American Dance Therapy Association

Bessel A. van der Kolk, medical director, Trauma Center at Justice Resource Institute

Rebecca Vaudreuil, Creative Forces music therapy lead, Camp Pendleton

Melissa S. Walker, healing arts program coordinator/art therapist, the NICoE

Allison F. Winters, wellness coordinator, the NICoE