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**ARTS RESEARCH ON CHRONIC STRESS (ARCS) LAB**

**YEAR 1 ANNUAL REPORT**

Drexel University was the recipient of an inaugural cooperative agreement under the National Endowment for the Arts’ Research Labs initiative in 2017. The lab at Drexel—Arts Research on Chronic Stress (ARCS)—examines the intersection of the arts, health, and social/emotional well-being. The lab also seeks to connect creative arts therapies with community-based arts organizations and events to enhance social engagement and overall well-being in those who have been affected by prolonged stressors such as chronic pain, extended caregiving, academic stress, and trauma. The lead investigators for the studies are [Dr. Kaimal,](http://drexel.edu/cnhp/faculty/profiles/KaimalGirija/) EdD, MA, ATR (PI, Assistant Professor, and [Dr. Bradt](http://drexel.edu/cnhp/faculty/profiles/BradtJoke/), PhD, MT-BC (Co-PI, Associate Professor), both faculty in PhD program in Creative Arts Therapies).

**Study 1: Health outcomes of visual self-expression for patients with cancer and their caregivers**

Dr. Girija Kaimal leads a study on arts-based approaches to promoting health and well-being for caregivers of cancer patients undergoing radiation oncology treatment. The study compares outcomes from two brief visual self-expressive approaches with patients, family caregivers and professional healthcare providers. The study is founded on the theory that patients who are diagnosed and treated for cancers have underserved psychosocial concerns, in addition to the physical symptoms of the illness. These psychosocial concerns include fears about the course of the illness, changes in mood related to the prognosis, stressors about treatment and caregiving needs, as well as existential reflections on mortality from the illness. These psychosocial needs could potentially be met with the creative arts therapies. The study is being conducted in collaboration with the Radiation Oncology Department at the University of Pennsylvania. The outcomes being examined in the study include affect, mood, self-efficacy, creative agency, and, perceived stress. The community partners for the study will contribute to transformations in the space of the hospital with exhibitions of artwork created during the study. The aim is to examine how integration of the arts into different aspects of healthcare can impact both quality of life and quality of care. To date we have collected data from 15 patients, 22 healthcare providers and 6 family caregivers (for targeted total of 35 caregivers and 15 patients as part of this pilot study). We have also expanded data collection to two satellite sites of the hospital located in Cherry Hill, NJ and Valley Forge, PA. All sites have been receptive to the study but it has proved difficult to recruit family caregivers. We suspect that this might be related to their role and reluctance to engage in self-care and/ or expressive activities at the present time in their lives. In addition, many of the healthcare providers also referred to being interested in the study but have been unable to schedule time to participate due to their demanding work schedules and expected prioritization of patient care. Several efforts were made to provide release time for health care providers to participate including through their respective supervisors. This helped recruit some participants especially during lunch hours. We continue to make efforts to reach out, recruit and work around the needs of the participants. Recruiting family caregivers has been harder for a variety of reasons. Caregivers are well known to be hard to recruit because participation implies additional work in finding apt coverage for patient care. In addition, although several caregivers reported wanting to participate but also perhaps perceived the study as “one more thing to do” in an already stressful day. Future studies will require more targeted budgetary investments in reaching out to caregivers and also offering home based interventions that make it easier for them to participate.

Discussions are ongoing for two community art exhibition events inspired by study participants’ visual and narrative expressions at two sites (Cherry Hill, NJ and Philadelphia, PA) in the fall of 2018. These events will be publicized and information will be shared extensively in online and media outlets.

Research team:

William Levin, MD, Penn Medicine

Juan Muniz, PhD, Lab Analyst, Drexel University

Janell Mensinger, PhD, Statistician, Drexel University

Jess Drass, MA, ATR-BC, Graduate Research Fellow, Drexel University

Rebekka Dieterich-Hartwell, MA, BC-DMT, Graduate Research Assistant, Drexel University

Katrina Carroll, MA, Graduate Research Fellow, Drexel University

Joke Bradt, PhD, MT-BC, Associate Professor, Drexel University

Milestones and dates: Data collection for the study is expected to be completed by May 2018. We shared artwork and study details at the annual Penn Medicine Radiation Oncology Patient Alumni Reception on April 9, 2018. The information was shared as part of a larger event celebrating patient care at Penn. Thereafter we will focus on data entry and analysis of biomarkers in summer 2018. In the fall, we expect to host two community art exhibition events including at the Philadelphia, PA Penn Medicine site and the Cherry Hill, NJ site. In addition, we also expect to present findings at the annual meeting of the American Art Therapy Association in Miami, FL (November 2018) and the National Organization of Arts in Healthcare conference in Austin, TX (October 2018).

Technical group contributions: The technical group for the study mainly include Dr. Levin and Dr. Smyth. Dr. Levin is a Co-PI for the research study from the University of Pennsylvania and has been actively included in the recruitment process and inclusion of the additional sites for the study. In addition, he is involved in discussions about the community event and potential community arts partners. Dr. Smyth has been helpful in discussions of methodology and analysis of biomarkers for the study including focusing on the salivary markers of cortisol and interleukin-6 as most likely to shift during the course of the brief intervention.

**Study 2: Creative music engagement to improve core outcomes in chronic pain**

Dr. Joke Bradt leads a mixed methods research study aimed at examining the effects of participation in a 12-week music therapy treatment program followed by participation in community-based music groups. Participants in these activities will be compared with a waitlist control group for core outcomes in chronic pain management. We aim to enroll 50 participants. The following outcomes are measured at baseline and post-intervention: pain-related self-efficacy, pain interference, pain intensity, emotional distress, physical functioning and participation in social activities. This study is the first to examine the impact of a music therapy intervention followed by a transition into community-based music making for people with chronic pain. Apart from tracking changes in outcome measurements, the study will evaluate the feasibility of the post-intervention community music engagement for this population. Semi-structured interviews will be conducted with study participants about their experiences of the 12-week music therapy intervention and their participation in community-based music groups. The purpose of these interviews is to help explain treatment outcomes and enhance understanding of possible barriers and facilitators of treatment success. Our community partner for this project is the Settlement Music School, one of the largest nonprofit community schools of the arts in the U.S. The school provides 10,000 weekly services of individual lessons, classes and activities in music, dance and visual arts to children and adults throughout Philadelphia.

We initially started the study at a new health clinic at Drexel University but the small clinic population pool made recruitment very challenging. The study was subsequently moved to Drexel University’sStephen and Sandra Sheller 11th Street Family Health Services (11th Street). This health center provides healthcare services to over 3,500 adult patients annually. It is located in the 11th Street Corridor, a neighborhood of 20,000 low-income residents (90% African-American). Most patients (80%) at 11th Street suffer from at least one chronic disease, and approximately 30% of patients seek treatment for chronic pain. We currently have 13 people enrolled in the study and have an additional 18 patients screened for the next wave. Since recruitment of people with chronic pain into clinical trials is known to be very challenging, we are using a wide variety of recruitment strategies including: 1) posting of study flyers around the clinic; 2) referrals by providers; 3) placing phone calls to eligible patients; 4) use of a quick screener form to gauge interest in study when patients arrive for a clinic appointment; 5) frequent meetings with providers to keep them informed about the study; 6) announcement of study in the clinic newsletter; and 7) Meetings with community advisory committee.

Research team:

Amy Kesslick, MA, MT-BC, music therapist, Stephen and Sandra Sheller 11th Street Family Health Services

Lindsay Edwards, MA, BC-DMT, LPC, Director of Creative Arts Therapies Department, Stephen and Sandra Sheller 11th Street Family Health Services

Fenqing Zhang, PhD, Statistician, Drexel University

Mark Bottos, MCAT, Zausmer Program Director of the Kardon Center for Arts Therapies

Ming Yuan Low, MT-BC, Graduate Research Fellow, Drexel University  
Clarissa Karlsson, MT-BC, Graduate Research Fellow, Drexel University

Dr. Girija Kaimal, Assistant Professor Drexel University

Milestones and dates:

Completion of post-intervention data collection is expected for February 2019. Analysis of post-intervention group comparison as well as interview data will be completed by March 2019.

We plan to present preliminary findings at the national conference of the American Music Therapy Association in November 2018. In addition, Dr. Bradt will be presenting on the underlying mechanisms of music therapy for chronic pain management at the International Congress of Integrative Medicine and Health in Baltimore (May 2018), the Philadelphia Pain Symposium (May 2018), and possibly at the World Congress of Pain in Boston (September 2018, pending acceptance of abstract). These presentations will focus on the impact of music on the neural reward circuitry and its role in pain management.

We aim to complete a community guide by February 2019.

Technical group contributions:

The technical working group for this study include Lindsay Edwards of 11th Street, Sue Carter of the Philadelphia Family Practice and Counseling Network, and Mark Bottos of the Settlement Music School.

Lindsay Edwards has been instrumental in successfully integrating this study in the 11th Street health care center by helping the research team connect with providers in primary care, behavioral health, and physical therapy, and developing recruitment strategies that are sensitive to the needs and cultural values of the population served at 11th Street. In addition, she recommended that this study track service usage data at 11th Street (e.g. use of behavioral health, complementary therapies, physical therapy, gym, etc.) as well as medication usage of patients throughout their study participation. These measures will allow us to better control for confounding variables and examine the impact of the 12-week intervention program on service usage (e.g. medication and treatment compliance, use of primary care services, etc.). To this end, Sue Carter has developed software strategies for tracking service usage data of patients enrolled in the study. Finally, we are collaborating with Mark Bottos to determine classes at the Settlement Music School that will be appropriate for participants to transition into. In addition, we are exploring options for other community partners as the location of the Settlement Music School branches may not be convenient for all participants and because class offerings during the summer are limited.

We expect that in future years as the studies generate more findings, we might be able to present overarching theory about how the arts could help address bio-psychosocial issues associated with chronic stress.

**FUTURE RESEARCH IDEAS FOR THE ARCS LAB**

**Art Therapy**

* Virtual Reality (VR) in art therapy: We have been exploring applications of creative visual self-expression using virtual reality tools such as Tiltbrush and Kodon. To date we have examined the experiences of healthy adults who report finding that creating in virtual reality to be energizing, inspiring movement, creativity, and, perspective taking. We would like to expand the study to clinical populations including those experiencing physiological and/or psychological challenges. Potential clinical populations to explore the applications of VR include patients and families with cancer, patients with multiple sclerosis, caregivers of patients with chronic illnesses, and, academically stressed youth.
* Comparison of reward perception between artmaking and food: We have developed a pilot protocol that examines the roles of artmaking as a substitute for food and a potential intervention for higher-weight related health problems. This study will compare outcomes of nutrition only interventions with a nutrition+art therapy intervention for weight loss. Outcomes assessed will include measures of mood, self-awareness, self-efficacy, creative agency, weight and reward perception (as measured using functional near infrared spectroscopy).

Additional proposed partners and collaborators

* Dr. Deeptha Sukumar (Nutrition sciences)
* Dr. Arun Ramakrishnan (Virtual reality)
* Dr. Hasan Ayaz (Biomedical Engineering)
* Dr. Jennifer Nasser (Nutrition Sciences)
* Arts + Mind Lab, Johns Hopkins University
* Science Center, Philadelphia

**Music Therapy**

* Comparison of music listening on dopamine release in healthy adults vs adults with chronic pain: Music listening has been shown to significantly impact the neural reward circuitry (and thus dopamine release) in healthy adults. At the same time, brain imaging studies have shown that chronic pain alters the reward circuitry in people with chronic pain. Based on these brain imaging studies, Dr. Bradt has argued that the impact of music on the reward circuitry could play an important role in music for pain management. To date, no studies have been conducted on the impact of music listening on the dopaminergic system in people with chronic pain. We would like to conduct a pilot study comparing the effects of music listening on dopamine release in healthy adults versus adults with chronic pain. This pilot data will be needed to apply for NIH funding. Because of the NIH/Kennedy Center’s Sound Health initiative, several funding opportunities have been released (and more will be forthcoming) with music therapy and chronic pain as areas of interest.
* Impact of music therapy on post-surgical pain management and opioid usage: In light of the current opioid crisis and the CDC recommendations for use of non-pharmacological pain management strategies, there has been increased attention to the development of post-surgical chronic pain and opioid usage. In fact, prolonged pain and opioid usage following surgery appears to be a main risk factor for the development of opioid addiction. Current studies on music intervention for post-operative pain management have only examined short-term impact of music listening (i.e. 1-2 post-operative days). We are interested in examining the impact of a brief music therapy intervention that would teach patients music-based self-management skills to aid with pain management following surgery. We plan to examine treatment effects on pain intensity, pain self-efficacy, opioid usage, and over-the-counter pain mediation usage at 1 month, 3 months and 6 months following surgery.