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Abstracts from Spring 2019 Research and Creative Activities Day Presentations

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Abstracts to be Published in the Fall, 2019 Edition of Ramifications

The following abstracts were for the posters and presentations given during Research and Creative Activities Day, Fall, 2018 at West Chester University.

Title: Humanitarian Aid on The Border

Student Researcher: Emily Rodden (Anthropology and Sociology)

Faculty Mentor: Michael Di Giovine (Anthropology and Sociology)

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This ethnographic study investigates the day-to-day work of nonprofits in Tucson, Arizona providing humanitarian aid to undocumented migrants crossing into the United States. Approximately 7,000 people have died in the Sonoran Desert trying to enter or re-enter the United States. In response to this humanitarian crisis, these non-profits leave water, food, and provisions on known migrant trails in the Sonoran Desert. In conducting this research, participant observation and interviews were conducted with Arizona-based nonprofits like No More Deaths, Tucson Samaritans, Humane Borders and especially Borderlinks, a nonprofit organization that offers experiential educational delegations that explore issues of global economics, militarization, immigration, community formation, development and social justice in the US/Mexico borderlands. Borderlinks specifically caters to short-term volunteers who travel to Tucson to gain experiential learning and to assist in humanitarian aid work. The purpose of this research to understand the grassroots working of this particular nonprofit and the motivations of the American citizens who serve as volunteer workers. More generally, this study aims to understand the work of nonprofits standing in tension with a neoliberal governmentality, the role these nonprofits play in relation in the broader geopolitical arena, and to understand how

so-called “voluntourists” (Mostafanezhad 2014) learn about, and make meaning of, the complex migration situation on the US-Mexico border.

Title: An Indian Philosophical Critique of Mindless Eating

Student Researcher: Alissa Grady (Liberal Studies)

Faculty Mentor: Jea Sophia Oh (Philosophy)

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According to the United Nations, by 2050 it is projected that meat production will increase from 259 tons to 455 million tons each year to satiate the surplus need. Traditionally, in most Western countries, meat has been considered a costly food. As the world population and economy increases, so does the meat industry. Currently, the production of meat and dairy consumes seventy percent of global water, uses thirty percent of land, and results in nineteen percent of the world’s greenhouse gas emissions. Greenhouse gases, such as carbon and methane, are causing rapid global climate change, biodiversity loss, and environmental degradation. The largest impact of beef production upon the greenhouse effect comes from the loss of carbon-dioxide absorbing trees, grasses, and plants where feed crops are grown and harvested. Another significant impact of beef production comes from methane which is released from animal waste, as well as is released from the animals themselves as they digest their food. Yet, the meat industry business pays no mind to the inhumane treatment of animals, the state of the environment, and the environments that result in the spread of disease.

As we contemplate the future of sustainability, our food system is in a perilous state. Environmental change will have a significant impact on our food systems. The impact will not only be from economic and ecological factors, but also from cultural and regional factors. To prevent this, national dietary patterns need to be considered and our focus should be aimed

towards a nonviolent society. Mohandas Karamchand Gandhi's nonviolence is one of his most important contributions to environmentalism. Two essential themes of Gandhi's thoughts were to live more simply and more self-reliantly. An essential key to nonviolence would be noncooperation. Noncooperation is living as a vegetarian. It also involves the practice of living mindfully, as well as active living in unity with humans and nature.

Living mindfully requires conscious effort. The Hindu term, *yoga*, is a spiritual and ascetic discipline. The discipline of yoga, practiced for health and relaxation, can be used to develop this mindset. Gandhi's goal was to lead this world into a nonviolence mindset. This mindset gives respect for all living things and avoidance of violence towards others, which is practicing *Ahimsa*. *Ahimsa* is one of the cardinal virtues and important tenets of Jainism, Hinduism, and Buddhism. *Ahimsa* is the realization that you are not separate from the world around you. To practice this *Yama*, this nonviolence should be distilled physically, mentally, and emotionally. The *Yama* is living your life simply to avoid the harm to yourself, animals, and the people around you, which in turn affect the cosmos. To make this a habitual practice, you start with dietary patterns, including little to no meat consumption. Making this small change by people worldwide would improve environmental performance and reduce costs. In general, when we take care of ourselves and our animals it would make a significant contribution toward the healing of our environmental loss and degradation, which in turn will affect our interconnected whole.

Title: The Faces of Ageism

Student Researchers: Joyce, Pour-Azar, Lauren Stricker (Psychology)

Faculty Mentor: Jasmin Tahmaseb McConatha (Psychology)

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Through educating about ageism, the goal of our presentation is to build sustainable work communities for people of all ages. Described as “the third great ‘ism’ in our society, after racism and sexism” (Palmore, 2001), ageism is the act of stereotyping or discriminating against a person or a group of people based on their age. While not as widely acknowledged, it is the most universal of the ism’s, as it can be experienced by anyone who lives long enough, and with new technological advancements, people are living and working longer than ever before. According to the Bureau of Labor Statistics, the participation of those 55 and older has increased by 5%. In fact, the age group of 65-74 is projected to see the second-largest labor force increase between 2017 and 2026 (Bureau of Labor Statistics, 2017). With this growth, an increase in age discrimination is expected. AARP (2014) has reported that 64% of workers have experienced ageism in the workplace. As a consequence, employers are observing a decline in job engagement and job satisfaction. Furthermore, employees are experiencing personal injury as this type of discrimination undermines their confidence, feelings of self-worth, and overall life satisfaction. Our poster will present the many faces of ageism as it relates to the workforce. A specific focus will be on the political and social factors that act as enablers of age discrimination. The poster will also introduce ongoing research on ageism’s effect on the well-being and coping tactics of university faculty members.

Title: Proximity in Captive Bachelor Western Lowland Gorillas at The Philadelphia Zoo

Student Researchers: MacKenzie Holm, Samantha Bobst, Joelle Buenaventura, Julianne Duko, Angel Jacabella, Taylor Stuart, Liam Pierson (Psychology)

Faculty Mentor: Rebecca Chancellor (Anthropology & Sociology and Psychology)

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Recent research suggests that the formation and maintenance of bachelor groups is a viable strategy for housing captive male gorillas. However, previous studies have found differences between groups regarding male-male proximity. In this study, we analyzed a bachelor group of two silverback western lowland gorillas at the Philadelphia Zoo. We collected data 1-2 times a week for a total of 9 months (1/30/18-9/29/18). We conducted 30-minute focal samples, during which we recorded activity budget and proximity data. The categories we used for activity budget included social play, resting, feeding/foraging, moving/traveling, and others. The four categories of proximity included far (different enclosures), distant (> 5 m), proximate (< 5 m), and in contact. We predicted that the males would spend the majority of their time at distances > 5 meters apart. Overall, we found that the males spent the majority of their time distant (61%), followed by far (22%), proximate (14%), and contact (3%). We also found that one male initiated the majority (77%) of approaches when the males did approach each other. Regarding activity budget, both males spent the majority of their time resting (67%, 68%), followed by feeding/foraging (15%, 20%), moving/traveling (10%, 6%), and social play (6%, 5%). Our results support previous studies that have found that silverbacks in bachelor groups tend to spend the majority of their time at greater distances. In addition, our study contributes to expanding our understanding of captively housed great apes.

Title: Beliefs about English Language Learners of Teacher Candidates and Recent Teaching Graduates of West Chester University

Student Researcher: Kathleen Shultz (Biology)

Faculty Mentor: Margaret Niiler (Languages and Cultures)

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The number of students with an L1 (native language) other than English shows an increase in schools across America over time. Teacher beliefs impact the actions and decisions of teachers and thus the instruction within the classroom. Teachers' misconceptions about ELLs or their instruction may negatively impact the education ELLs receive.

This research examines how teacher beliefs held by two groups specific to West Chester University: current teacher candidates and teacher graduates within the past four years. This research explores these beliefs through seven different constructs of teacher beliefs: relationship between L1 and L2 (second language); optimal age to begin L2 instruction; importance of extent of exposure to L2; relationship between oral communication and academic language skills; teacher self-efficacy with ELLs; preparedness in teaching children from different backgrounds as influenced by WCU courses; and finally, personal experience with ELLs.

On average, teachers and teacher candidates understand how ELLs learn a language; however, some results showed some common misconceptions, such as not recognizing the importance of an ELLs' strength in their L1 to their academic performance in English. The construct teacher self-efficacy with ELLs had several strongly correlated factors, which suggest that this construct really measured two separate constructs: teachers' confidence in their own linguistic abilities and teachers' ability to recognize their students' cultural factors, such as the differences in communication between home and school environments to the willingness of students to participate in group work (0.50) or to the ways in which school culture differs from students' home cultures (0.63).

Title: Cortisol Response to Positive Reinforcement Training in Chimpanzees

Student Researchers: Amanda Johnston, Justin Gibson, Taylor Potts-Gordon, Sofia

Vanderhyde, Ryan Manzo, Natha Helfrick, Olivia King, Rebecca Burr (Chemistry)

Faculty Mentor(s): Aaron Rundus (Psychology)

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Positive reinforcement training (PRT) is a tool used by animal caretakers worldwide to provide enrichment for captive animals and facilitate medical and research procedures. A form of operant

conditioning, PRT trains animals towards a desired behavior by breaking it down into smaller steps. Participation by the animal is always voluntary and the benefits are numerous. One of the largest benefits of PRT is reduced stress during standard procedures such as medical exams or cleaning, however training can disrupt normal routines and cause stress in return. Due to their intelligence, and the dangers to both the animals and caretakers during restraint procedures, non-human primates often receive PRT. Analyzing cortisol levels in primates can provide insight into whether training induces a state of arousal. This study measures the cortisol naturally found in chimpanzee saliva to determine if PRT training sessions induce a change in cortisol concentration in individuals at the Maryland Zoo. Samples were taken using cotton swabs before and after training sessions, and enzyme-linked immunosorbent assay (ELISA) was used to determine the cortisol concentration. Here we present results on the PRT induced release of cortisol in the chimpanzees and how individuals react differentially to this training regime. Results from this experiment will help to inform captive management plans for zoo animals and guide the refinement of training procedures to minimize their impact on stress.

Title: Learning with Music: Early Childhood Music Program Associated with Advantage in Self-Regulation

Student Researchers: Mary Ann Blumenthal, Zachary Weaver, Keriann Mosley, Alyssa Allen, Dominique McQuade, Amelia Oberholtzer, Jacquelyn Redmond (Psychology)

Faculty Mentor: Eleanor Brown (Psychology)

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In recent years, a national spotlight has centered on children's executive functioning abilities as critical for success in formal schooling. Poverty-related stressors pose challenges for the development of executive functioning skills. Emergent evidence suggests the possibility that

music and arts programming may facilitate the development of these skills. The present study examines the impact of MacPhail's Learning with Music Program on the development of executive functioning skills for preschool children facing economic hardship. Participants included 119 preschool children from one of two cohorts attending the same two preschools. The first cohort (n = 130) who participated in Year 1 of the study received preschool programming as usual, whereas the second cohort (n = 104) who participated in Year 2, received the supplemental MacPhail Learning with Music Program delivered in their regular preschool classrooms. For both cohorts, parents completed demographic interviews at the start of the year, and children completed three tasks tapping the inhibitory control aspect of executive functioning at the start, middle, and end of the preschool year. Results of growth curve modeling suggested that those children who received the MacPhail Learning with Music Program showed greater growth across the year in inhibitory control. Implications concern early childhood music programming as a mechanism for alleviating the impact of poverty-related stress and promoting positive outcomes for children facing economic hardship.

Title: Developing A Date-Fruit Based Sports Gel

Student Researchers: Terrence Riley, Kelly O'Donnell, Megan Ray, James Palmer

(Nutrition)

Faculty Mentor: Amir Golmohamadi (Nutrition)

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Sports gels are used as an energy source for endurance athletes during extended bouts of exercise. Date fruits provide carbohydrates in addition to components of energy metabolism not present in the Commercial Sport Performance Gels (CSPGs). The objective of this project was to develop

and compare the nutrient density of a Noor Date Fruit-based Sports Gel (NDSPG) to a maltodextrin-based CSPG.

A date-fruit gel was developed using a heated bath technique and combined with a coconut-based chocolate sweetener mix. Pitted Noor Dates (105g) were submerged in water at a rolling boil and mixed with 1 gram, 5 grams, and 15 grams of polydextrose and tapioca fiber respectively. The mixture heated at 92°C water bath for 5 minutes followed by cooling down and storing at 40 °C for 24 hours. ESHA Nutrient Analysis Software was used to compare the nutrient and calorie content of the developed gel and the CSPG. Nutrient analysis identified higher caloric (+100g) nutrient content in the NDSPG compared to the CSPG. For a 40 gram serving size, the NDSPG contained 16 grams of fat, 37 grams of carbohydrates, 2.61 grams of protein, 4 grams of fiber, 4.75 micrograms of folate, and 164 milligrams of potassium, which were higher than CSPG. The CSPG was higher in sodium (50mg vs 0.5mg) and calcium (100mg vs 9.75mg). Preliminary production of a date fruit-based sports gel showed adequate gelling properties and greater nutrient content compared to the commercial sample. Further objective and subjective analyses are required to optimize the product.

Title: A Comprehensive Approach to Composting on Campus

Student Researcher: Tiffany Kennedy (Nutrition)

Faculty Mentor: Ashlie Delshad (Political Science)

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Reducing humanity's carbon footprint has been an emerging trend as we face the global issue of climate change. There are many ways to reduce one's personal carbon footprint, one way I have made a large difference in my own footprint is by composting. As a passionate composter, I started two compost initiatives and created a petition calling for more composting on campus. After

getting over 250 signatures, I decided to research and put forth a proposal for WCU to begin campus-wide composting to help our university reduce its carbon footprint. The information from my study is based on interviews of key stakeholders involved in composting efforts that have occurred on WCU's campus in the past. These interviews focused on what these prior projects accomplished and what groundwork they have provided as we prepare WCU to move forward with campus-wide composting. I also examined models from other PASSHE schools and similar universities that have established compost programs.

Overall, my research explains: what composting is, the benefits of composting, why composting is needed to reduce WCU's carbon footprint, how composting can help fulfill both Pennsylvania's Climate Action Plan and WCU's Climate Action Plan, and the next steps WCU should take in moving towards campus-wide composting.

Title: A Changing Understanding of ADHD: How Current Research Challenges Its Classification Under the Idea

Student Researcher: Samantha Walsh (Special Education)

Faculty Mentor: Barbara Reed (Special Education)

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Children and adults with neurodevelopmental disabilities frequently challenge the means in which traditional disability classifications function. Because of the ways in which children who are affected by deficits in neurodevelopment experience challenges with executive functioning, emotional regulation, and cognitive development, their classification under the IDEA and lack of consideration for services under the Americans With Disabilities Act into adulthood must be critically evaluated in terms of the services, and lack thereof, that their classifications provide under these laws. Contemporary research has classified ADHD as a neurodevelopmental disability,

contradicting the disability's classification as an "Other Health Impairment" which covers physical illnesses such as asthma and diabetes, under the IDEA. Research conducted in the 1970s that labeled the disorder as a childhood condition reflects the means in which ADHD was classified under federal law. As a result, the IDEA's current classification for ADHD demonstrates an outdated perception of how ADHD impacts children and how the disability affects their livelihoods as they move into adolescence and adulthood. In addition, the classification fails to recognize the similarities in delayed neurodevelopment, executive functioning, and social deficits that the diagnosis shares with Autism Spectrum Disorder, which currently has its own category under the IDEA.

Title: Tuning in to an Unheard Population: Improving Research Methods to Assess LGBTQ Needs in Chester County

Student Researcher: Kateri Sload (Psychology)

Faculty Mentors: Michael Gawrysiak, Stevie N. Grassetti (Psychology)

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Current literature routinely reports disproportionately poor health outcomes within lesbian, gay, bisexual, transgender, queer/questioning (LGBTQ) communities, compared to their counterparts, indicating a great need for health services. However, widely-used methods of data collection lack the sensitivity and precision to detect this 'hidden' population within the public context or represent a diversity of LGBTQ experiences. For instance, TGNC (transgender/gender non-conforming) individuals are frequently, if unintentionally, filtered out of research samples due to limitations incurred by the routine methodologies employed in psychological research. Standard data cleaning practices applied without critical consideration, for example, play a role because of

their binary-based presuppositions on what constitutes a valid subject submission, and what is deemed as noise.

LGBTQ folks and their voices are thus obscured—yet their input is vital in understanding how to address their underserved status. In Chester County, no data on LGBTQ residents exists, leaving their community needs unidentified and unattended to. The study in progress offers an opportunity to advance the scientific study of the LGBTQ population and to gather local data that could inform public policy decisions. The aims of the project are 1) to develop new, sensitive measures that will aid researchers in distinguishing between subgroups within the LGBTQ population, and 2) to use this tool along with other methods to thoroughly assess the needs of the LGBTQ community in Chester County, PA. Results could have a profound effect on the awareness of LGBTQ-related issues in our community and could advance the procurement of funding for future research and solutions.

Title: Social Class-Based Norms and Social Support among First-Generation College Students

Student Researchers: Colin Mancini, Erin Walsh, Ali Donohue Ashley Nielsen, Adam Vanluvane (Psychology)

Faculty Mentor: Janet Chang

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Limited research has examined cultural influences on diverse first-generation college students' use of social support. Utilizing data from 25 interviews (24% Racial/Ethnic Minorities, 76% Whites), we investigated the influence of cultural values and salient relational concerns that inhibit the use of social support. While the majority of students reported notable relational concerns (e.g., burdening others and being judged) that lessened the use of social support, minority students

reported greater self-reliance due to relational concerns. Concerns related to social class survival and being resilient were shared among both groups of students. Understanding cultural influences on first-generation college students' help-seeking behaviors is critical in overcoming achievement gaps.

Title: Hidden Symmetries for Transparent de Sitter Space

Student Researcher: Garrett Compton (Physics, 2019, Mathematics, 2020)

Faculty Mentor: Ian A. Morrison (Physics)

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It is known that odd-dimensional de Sitter space acts as a reflectionless potential for free fields. Previous studies have explained this phenomena by relating de Sitter free field equations of motion to the time-independent Schrodinger equation with known reflectionless potentials. In this work, we show that de Sitter's transparency is a consequence of an infinite set of "hidden" symmetries. These symmetries are an indirect consequence of the de Sitter boost isometries. We consider in detail the case of massive Klein-Gordon theory. We show that the Noether charges associated with these hidden symmetries distinguish linearly-independent solutions of free field wave equations in the asymptotic past and future of de Sitter. Conservation of these charges requires that the asymptotic behavior of any solution be the same in the future and the past, which is the property of transparency. Upon quantization of the Klein-Gordon field, the Noether charges serve to distinguish members of the family of de Sitter invariant vacua. The "in/out" vacuum is the unique state invariant under the hidden symmetries. For all other vacua, the action of the charges generates particles. We comment further consequences of these charges, and on how these hidden symmetries may be present in interacting theories.

Title: Science Is Art: Needle Point Designs to Connect with a General Audience and to Communicate the Beauty

Student Researchers: Rebecca Spackman, Jenna Cummings (Psychology)

Faculty Mentor: Stevie N. Grassetti (Psychology)

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Psychological scientists have developed effective treatments for mental illness that are supported by empirical research. Unfortunately, this research is not widely read which prevents research-supported interventions from being understood by the general public and disseminated in psychological practice. Improving the general public's understanding of psychological research may help to promote a stronger push for evidence-based psychological health care. The current work of art exemplifies an effort from a psychological research team to communicate their research findings in a way that is creative and appealing to a general audience. Presenters have dramatically improved the typically dull research graphs by creating them into handmade works of art using textiles and embroidery as mediums. Students involved in this project have not only created the geopolitical but have also contributed to the research projects that the works display. Specifically, the pieces artfully display 1) mean-level pre-post change in post-traumatic stress (PTS) symptom reduction that occurred during the course of implementing an evidence-based intervention in a school setting and 2) the symptom change that occurred for each child participating in the intervention. Displaying these research findings through visually appealing creative works allows researchers to demonstrate both that 1) significant change has occurred over the course of treatment and 2) that the process of change may look different for different people participating in the same program.

Title: I'm With You

Student Author: James Devor, (Music Theory, History and Composition)

Faculty Mentor: Jacob Cooper

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The work, *I'm With You*, is composed in three short movements and written for solo unaccompanied contrabass. The composer wrote *I'm With You* after being recommended to read Allen Ginsberg's famous poem, *Howl*. The piece uses various programmatic musical elements to represent sections of the poem. Insistent thematic material occurs throughout the piece, mimicking the manner in which Ginsberg's poetry utilizes the technique of anaphora in each of the three sections of his poem. In *I'm With You*, the composer means to demonstrate how musical and literary material can be both influential upon each other, while still existing on separate planes. The piece is not meant to follow the poetry or be performed in the manner of a vocal work, but rather to exist in its own musical realm.

I'm With You begins with a slow, lyrical melody, which embraces the rumbling lower register of the bass. The piece then begins to build in intensity through each section. The middle section is a quasi-scherzo section that expands the register of the instrument whilst still remaining grounded in tonality. The piece concludes with a closing fanfare, alluding to the raucous shouting in Ginsberg's Footnote to *Howl*, an addendum to the poem. *I'm With You* explores literature in music and expands the contemporary repertoire for solo contrabass.

Title: A Creative Approach to Explaining Evidence-Based Therapeutic Processes to a General Audience

Student Researchers: Emily Feldman, Brady Barley, and Cassidy Tenny (Psychology)

Faculty Mentor: Stevie Grassetti (Psychology)

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A wealth of empirical research has identified exposure therapy as a highly efficacious treatment for a variety of fear-related disorders including anxiety disorders, phobias, and post-traumatic stress disorder (Taylor, 2003; Rauch, 2012; Lazarus, 1961). However, the public at large remains relatively unaware of the importance of evidence-based treatment in the domain of behavioral health (Jorm, 2000). In order to promote evidence-based mental health care, clinical scientists must learn how to communicate with the general public about the therapeutic strategies that are supported by scientific evidence. Communicating scientific findings to a general audience requires creative, innovative approaches. As such, the current submission creatively and concisely explains exposure therapy to a lay audience through an entertaining video-recorded skit. This video was directed and produced by two West Chester University students. The video depicts the clinical process of graduated exposure treatment as administered by a professional to a patient suffering from a phobia, based on the existing clinical literature. West Chester's fearsome mascot, Rammy, also makes a cameo in the video.