



9th Annual Research Conference

April 2nd, 2019



Smart, Bold, Proud, Seriously Impressive



Savannah State University

9th Annual Research Conference (ARC)

Student Union Ball Room

Savannah State University

Savannah, GA 31404

April 2nd, 2019

Overview of the Conference and Committee Members

Savannah State University (SSU) will host its 9th Annual Research Conference in the King Frazier Ballroom on Tuesday, April 2nd, 2019, starting at 8:00 am. This event highlights research conducted by the faculty, graduate, undergraduate, and K-12 students at SSU and at other major research institutions. Faculty and students will showcase their various research projects in areas such as Biology, Behavior Analysis, Chemistry, Engineering, Environmental Sciences, Forensic Science, Geographic Information Systems, Global Logistics & International Business, Homeland Security & Emergency Management, Computer Science Technology, Marketing and Management, Marine Sciences, Physics, Mathematics, Political Science & Public Affairs, Teacher Education Sociology and Social Work.

The general format for this conference is poster presentations and serves as an important platform for students to present their findings to both the SSU and Savannah communities.

Abstracts published in this program reflect the individual views of the authors and not necessarily that of the Office of Sponsored Research Administration or Savannah State University.

Funding for this publication and event was made possible by the generous support from Office of Sponsored Research and Administration (OSRA) at Savannah State University

Annual Research Conference Committee Members

The organizing committee consists of individuals who contribute to various aspects of conference organization.

Dr. Chellu S. Chetty

Associate VP, Office of Sponsored
Research and Administration

Ms. Nancy Riggs

Director, Office of Sponsored
Research and Administration

Dr. Suman Niranjana

Associate Professor, College of
Business Administration

Dr. Abhinandan Chowdhury

Assistant Professor,
Dept. of Mathematics

Dr. Manoj Prasad

Assistant Professor, Dept. of
Chemistry & Forensic Science

Mrs. Devi Chellu

Program Manager, NIH-SSU-
MARC U*STAR & RISE, NSF-
SSU PLSAMP Programs

Mr. Patrick Dean

Director for Outreach and Career
Development/STEM 360

Dr. Lisa Yount

Associate Professor and QEP
Director

Dr. Shinaz G. Jindani

Professor
Department of Social Work

Mr. Harshavardhan Kenche

Research Associate, Dept. of
Chemistry & Forensic Science

The Organizing Committee would like to extend our THANKS to the many persons who contributed in so many ways to make this conference a continued success

9th Annual Research Conference

April 2nd, 2019

Unless noted, all events will take place in Student Union Ball Room

Agenda

8:30 am – 10:30 am

Registration and Poster Presentation

10:30 am – 10:45 am

Welcome Greetings:

Dr. Chellu S. Chetty, Associate VP for Research and Sponsored Programs

10:45 am – 11:00 am

Remarks

Dr. Michael Laney, Provost and Vice President for Academic Affairs

11:00 am – 11:30 am

Student Remarks for Research Experiences

Ms. Zarin Bhuiyan - College of Sciences & Technology (COST)

Mr. Michael Martin - College of Liberal Arts & Social Sciences (CLASS)

Mr. Raymond Elliott - College of Business Administration (COBA)

11:30 am – 11:45 am

Remarks

Dr. Cheryl D. Dozier, President, Savannah State University

11:45 am – 12:00 pm

Poster Presentation Award Certificates

Dr. Lisa Yount, Associate Professor of Philosophy

Remarks

Ms. Nancy Riggs, Director, Office of Sponsored Research Administration

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Greetings!

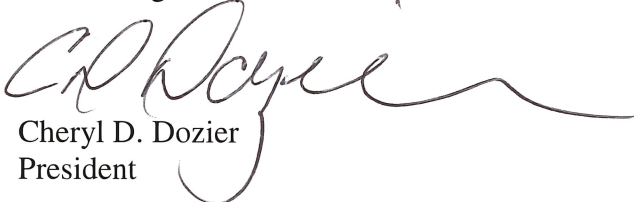
It is with great pride that I welcome you to Savannah State University's 9th Annual Research Conference. During my leadership at Savannah State University, this conference has grown in participation and impact with more than 150 posters being presented this year. It is exciting to witness this exchange of scholarly activity which includes presentations by our undergraduate and graduate students from the College of Business Administration, College of Liberal Arts and Social Sciences, College of Science and Technology and College of Education.

I appreciate the dedicated work that went into these research projects. Many of the projects being presented reflect issues and concerns that are highly relevant locally, nationally and globally. I encourage each of you to continue your scholarship on your journey of lifelong learning.

Under the visionary leadership of Dr. Chellu Chetty, Associate Vice President for Sponsored Research Administration, the Annual Research Conference has been thriving since its inception in 2011. I am grateful to all of the faculty mentors, judges and the entire conference committee who have worked tirelessly in support of students and research at Savannah State University.

I wish each of you a productive and successful conference.

Kindest regards,



Cheryl D. Dozier
President

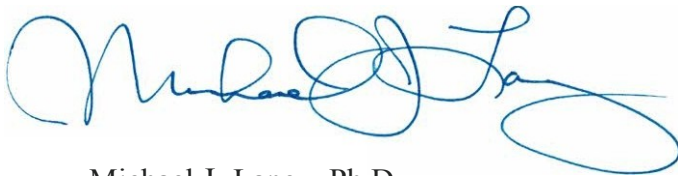


Welcome to our 2019 Annual Research Conference. This year's conference includes not only undergraduate and graduate student presentations but also faculty and local high school student presentations. We are encouraging the campus community because of our commitment to expand our research infrastructure. Recently, we have added new Science and Technology and marine science buildings which include additional dry and wet lab research spaces. This enabled more faculty to seek research dollars and involve more students in research. Currently, our focus is to expand interdisciplinary research to enhance SSU's research infrastructure further.

I am pleased to see our faculty are making significant contributions to research especially in STEM fields. The Office of Academic Affairs continues its commitment to support research at SSU. I am confident that the students and faculty will continue to add new dimensions to research and training programs at SSU.

Congratulations to our faculty and student investigators. We wish you continued success in the future

Sincerely



Michael J. Laney, Ph.D.
Provost/Vice-President of Academic Affairs



Dear Research Day Participants,

Welcome to our 2019 Annual Research Conference. This year's conference includes not only undergraduate and graduate student but also faculty presentations as well as K-12. We are encouraging the campus community because of our commitment to expand our research infrastructure.

Recently, we have added new Science and Technology and marine sciences buildings which include additional dry and wet lab research spaces. This has enabled more faculty to seek research dollars and involve more students in research.

Currently our focus is to expand interdisciplinary research at SSU and to strengthen our research infrastructure further. I am pleased to see our faculty making significant contributions to research especially in STEM fields. The OSRA continues its commitment to support research at SSU. I am confident that the students and faculty will continue to add new dimensions to research and training programs at SSU.

My special thanks to all faculty mentors, staff, and the organizing committee for their commitment and participation in making this event a success.

Sincerely,



Chellu S. Chetty, Ph.D.

Associate Vice President for Research and Sponsored Programs

College of Science and Technology

Biology

Bio-1

Benzalkonium Chloride and Betulinic Acid Induced Apoptosis on Human Cancer and Transformed Cells

Dr. Takayuki Nitta, Dr. Hua Zhao, Jasmine Phillips, Alexis Williams, Zarin Bhuiyan

Research Mentor: Dr. Takayuki Nitta

Benzalkonium chloride (BKC) is an organic salt classified as a quaternary ammonium compound. BKC shows antimicrobial activities against bacteria and some viruses, fungi, and protozoa, and the mechanism of the microbiocidal action of BKC is thought to be due to disruption of the cell membranes of microorganisms. Although BKC has been reported to enhance drug penetration and improve topical bioavailability of ophthalmia drugs, effect of BKC on proliferation of cancer cells are not well understood. Betulinic acid (BA) is a natural compound with potent in vitro cytotoxicity toward many cancer cells. A major obstacle in releasing the biological potency of BA is its poor solubility in aqueous solutions and common organic solutions (such as esters, alcohols, and ethers). Some derivatives of BA had shown improved water solubility, as well as enhanced biological activities when compared with BA itself. Previously, we developed new ionic derivatives of BA containing benzalkonium ion, and they exhibited a higher water solubility and stronger antiviral and anticancer activities. We here examined anti-cancer effects of BKC and an ionic derivative of Betulinic acid, BA-Gly with human tumor cells and transformed cells, HeLa, PC-3, MIA PaCa-2, and 293T cells, and found that cytotoxic effects of BKC varied among the cell lines. Interestingly, the cell viability assay demonstrated that combination of Benzalkonium and BA-Gly showed synergistic effects in 293T cells, but not in the other cell lines, implying that this synergistic effect might be against SV-40 large T antigen. To assess the effect of BKC and BA on apoptosis, the cells

treated with compounds were fixed with 4% formaldehyde and stained with DAPI. It has been concluded that single treatment of each BKC and derivatives of BA did not induce apoptosis in 293T and HEK293 cells. The combination of BKC and a derivative of BA showed high amount of apoptotic phenotype in 293T cells, but not in HEK293 cells, which seems to contribute to cytotoxicity in 293T cells measured by AlamarBlue Cell Viability Assay.

Bio-2

Establishment of a new assay system for infection of MnLV

Mia Edgerton, Dr. Takayuki Nitta,

Research Mentor: Dr. Takayuki Nitta

Introduction: The murine leukemia virus (MuLV) is a distinct retrovirus that has provided many avenues in developments in gene therapy, HIV research, and leukemogenesis research. The virus does not generally kill its host cell, and it is a causative agent of mouse leukemia. MuLV is a simple retrovirus that encodes gag, pol, and env. The proteins produced from the genes give structure proteins, enzymes and spike proteins that are found in a lipid bilayer. One of the unique features of MuLV and its group, gammaretroviruses, is that many encode an additional form of Gag protein, glycosylated Gag (glyco-gag). In Moloney murine leukemia virus, glyco-gag (gPr80Gag) is translated from unspliced viral mRNA via an upstream CUG initiation codon in frame with the AUG initiation codon for the Pr65gag polyprotein precursor for the viral core proteins. We recently found that glyco-gag counteracts host restriction factors that are intracellular proteins restricting viral replication in mouse fibroblast NIH3T3 cells. In contrast to modest effects of glyco-gag in NIH3T3 cells, a recent report suggested that human HT-1080 cells could provide a good platform to assess the function of glyco-gag by showing drastic difference between glyco-gag positive and negative MuLV infection. The objective of this project is to establish a new and efficient infection system to assess effects of glyco-gag in MuLV and its variant XMRV using

HT-1080 cells.

Methods: MuLV and XMRV viruses with or without glyco-gag are produced by 293T cells. Then the viruses were given to the HT-1080 cells. The viruses that will be used for infection experiments are detected by western blots using anti-MuLV p30CA. To give the same amount of viruses, the signals on the membranes will be quantified by the immunodensitometry software AlphaEase. The virus infectivity will be assessed by focal infection assay (FIA) with anti-MuLV antibodies.

Results: Our first trials showed no signals from the HT-1080 cells that were exposed to 10 ul of MuLV and XMRV viruses. Our second trial with 100 ul of the viruses showed differences between the plates with or without infection, but overall, the signals were weak. To assess our FIA system using HT-1080 cells, the plasmids expressing MuLV and XMRV were transfected and p30CA in the cells will be analyzed by indirect immunofluorescence assay.

Discussion: Although background signals in HT-1080 cells were very low in our system, positive signals were not strong. The FIA assay system can be optimized. Alternatively, a new assay system needs to be introduced to assess the effects of glyco-gag.

Bio-3

Role of Rab5 and Geranylgeranylation in MLV Replication

Iesha Phillips, Blessing Enya, Dr. Takayuki Nitta

Research Mentor: Dr. Takayuki Nitta

Murine leukemia virus (MuLV) is a simple retrovirus with three genes, gag, pol, and env that produce each structural polyproteins (Gag), enzymes (PR, RT) and envelope polyprotein (Env)¹. In late phase of viral life cycle, translated viral proteins are trafficked to the plasma membrane with the help of the cellular machinery. The immature particles are released from the cell, and subsequently undergo maturation as the PR in the virus cleaves the viral Gag polyproteins.

The Rab GTPase family regulates many steps of

membrane traffic, including vesicle formation, vesicle movement along actin and tubulin networks, and membrane fusion². Activities of Rab proteins are regulated by GTPase activating proteins (GAPs) and guanine nucleotide exchange factors (GEFs) that switch between an active GTP-bound state and an inactive GDP-bound state. Although it is known that Rab proteins affect replication of some viruses such as HIV-1 and influenza virus, their roles in MuLV replication remains elusive. To clarify how Rab proteins affect MuLV replication, viral structural proteins Gag in cells and in media (virus) were detected by western blots with anti-Gag (p30) antibodies. Overexpression of dominant negative (DN) forms of Rab proteins in 293T cells demonstrated that several DN-Rab proteins impaired MuLV release. Particularly expression of DN-Rab5 decreased virus release from 293T cells strongly. The similar results were obtained with a mouse cell line, 43D cells that are stably infected with MuLV. Co-localization of MuLV Gag and DN-Rab5 were observed in 293T cells, but expression of DN-Rab5 did not change distribution of Gag in cells.

The newly synthesized Rab protein binds to the Rab escort protein then prenylated at C-terminal cysteine residues by Rab geranylgeranyl transferase². After renylation, the Rab proteins can be delivered to a target membrane, where it is activated by GEFs. To test the effects of prenylation of Rab proteins in MuLV release, the viral producing cells (43D cells and 293T cells that were transfected with a molecular clone of MuLV) were treated with statins and GGTI-298. It is known that both chemicals can shut down the pathways required for geranylgeranylation. Surprisingly, the amount of Gag in cells and p30/Capsid (cleaved Gag) released into media were not affected by treatment of the inhibitors. Our data suggested that Rab5 is involved in MuLV release, but geranylgeranylation of Rab5 is not critical for viral release. We are currently investigating the effects of statins and GGTI on MuLV infectivity. Our preliminary data obtained by focal infection assay showed the chemicals significantly impaired MuLV infection.

Bio-4

POTENTIALLY HARMFUL AND TOXIC ALGAE IN COUNTRY CLUB CREEK (SAVANNAH, GA)

Raven Harvey

Research Mentor: Dr. Carol Pride

The purpose of this research is to determine whether potentially toxic or harmful algae are present in Country Club Creek in Savannah, GA and whether they vary seasonally. Samples were analyzed in fall, winter, and spring from 2016 to 2019. The temperature and salinity of the water was measured prior to sample collection. A 20 µm mesh phytoplankton net was used to collect phytoplankton over three-minute intervals at various tidal stages. Diatoms and dinoflagellates were identified to at least the genus level using an inverted microscope at 100x magnification. During this study, potentially toxic genera were found, but not at elevated levels. *Pseudo-nitzschia* sp., a potentially harmful diatom, reached a maximum relative abundance of 6% in February 2019. The maximum relative abundance of the dinoflagellate *Prorocentrum* sp. was 2% in spring 2019. *Akashiwo sanguinea* was noted because this dinoflagellate is potentially harmful. *Akashiwo sanguinea* represented at least 13% of the community on four occasions. Throughout the research, it was noted that diatoms outnumbered dinoflagellates. Diatoms such as *Cyclotella* sp., *Entomoneis* sp., and *Skeletonema* sp. were dominant.

Bio-5

Biology Faculty

Visualization of Annular Gap Junction Vesicle Processing: The Interplay Between Annular Gap Junctions and Mitochondria.

Bell CL¹, Shakespeare TI²,
Smith AR³, Murray SA⁴

¹University of Pittsburgh, Pittsburgh, PA 15261,

²Savannah State University.

³University of Pittsburgh, Pittsburgh, PA 15261

⁴University of Pittsburgh, Pittsburgh, PA 15261.

It is becoming clear that in addition to gap junctions playing a role in cell-cell communication, gap junction proteins (connexins) located in cytoplasmic compartments may have other important functions. Mitochondrial connexin 43 (Cx43) is increased after ischemic preconditioning and has been suggested to play a protective role in the heart. How Cx43 traffics to the mitochondria and the interactions of mitochondria with other Cx43-containing structures are unclear. In this study, immunocytochemical, super-resolution, and transmission electron microscopy were used to detect cytoplasmic Cx43-containing structures and to demonstrate their interactions with other cytoplasmic organelles. The most prominent cytoplasmic Cx43-containing structures-annular gap junctions-were demonstrated to form intimate associations with lysosomes as well as with mitochondria. Surprisingly, the frequency of associations between mitochondria and annular gap junctions was greater than that between lysosomes and annular gap junctions. The benefits of annular gap junction/mitochondrial associations are not known. However, it is tempting to suggest, among other possibilities, that the contact between annular gap junction vesicles and mitochondria facilitates Cx43 delivery to the mitochondria. Furthermore, it points to the need for investigating annular gap junctions as more than only vesicles destined for degradation.

Chemistry and Forensic Sciences

Chem-1

Suicide by Single Gunshot to the Head: Reconstructed in Virtual

Jimel Dean, Shaquenta Badger, Tracy Joseph Deandrea Gilmore

Research Mentor: Dr. Karla-Sue Marriott

Blood spatter is a random distribution of blood stains that vary in size and that may be produced by a variety of mechanisms. The spatter appears in a specific pattern on the surface it falls, known as the bloodstain pattern. In this project, the suicide case of a 90-year-old man who was found dead in his house was investigated using virtual reality technology. A reconstruction analysis was performed to determine the position of the body and orientation of the firearm during the suicide event. Blood spatter was found on surfaces in the victims house, gun, and hands, which was used to determine how the victim shot himself in the head. We recreated this case in virtual reality using the Vizitech blood spatter simulator. Based upon our blood spatter analysis and bullet trajectory calculations, we were able to obtain data for comparison with data from the actual suicide case. Virtual reality blood spatter recreations have allowed us to test theories and hypotheses through the ability to examine scenes as though the investigator was actually present during the commission of the crime, or in this case, suicide.

Chem-2

Synthesis of functionalized biodegradable Poly(alpha-methylene-gamma-butyrolactone) for medical applications

Daniel Inman

Research Mentor: Dr. Pascal Binda

An investigation was conducted on the synthesis of Poly (alpha-methylene-gamma-butyrolactone) also known as PMBL in order to gain a thorough understanding of how it can be used in

the medical field and how this polymer can be a greater influence outside of medical applications. PMBL is a stable polymer that has carbon to carbon double bonds present in its molecular structure. In order to change the functionalization of the polymer, the functional group had to be changed, the uses of the polymer can then be determined for biomedical applications. To fulfill the purpose of changing the polymers functional group, PMBL was brominated. By brominating the polymer, the carbon to carbon double bonds undergo an addition reaction with bromine. This alteration of the functional group allows the polymer to gain properties that are different from its original, such as, an established melting point, the ability to be self-dissolved in solvents (no heat or stir bar required), and possibly becoming water soluble. The product has an established point that was significantly lower than that of PMBL, meaning that the change in functional groups lead to a lower processing temperature. The brominated PMBL was analyzed using proton NMR and Gel Permeation Chromatography (GPC). The proton NMR showed the disappearance of methylene signals from carbon the double bonds. There was no major significant difference in molecular weight of the product and PMBL. Further studies will be conducted to assist with creating a functionalized water-soluble polymer.

Chem-3

The Role of Metavinculin-Vinculin Interaction in Actin Cytoskeleton Remodeling

Rayne Clark, Simone Rolle, Brea Davis Torri Saunders Kai Shen

Research Mentor: Dr. Kai Shen

Vinculin and its muscle specific variant metavinculin are key players in sensing and responding to external mechanical cues including extracellular matrix (ECM) stiffness. Increased ECM stiffness affects cytoskeleton morphology of vascular smooth muscle cells. However, the mechanism under which metavinculin interacts with vinculin and affects its capability to respond to ECM stiffness and reorganize cell cytoskeleton remains unclear. In this study, we employed

metavinculin tail mutants to examine how metavinculin-vinculin interaction affects actin filament reorganization. Our results showed that metavinculin formed a heterodimer with vinculin through their tail domains in the absence of phosphatidylinositol 4,5-bisphosphate, and this heterodimer inhibited vinculin-induced actin bundle formation. Furthermore, we found that one of the amino acid residue in metavinculin protein, located at its tail H1%Ű^a helix, is crucial for this heterodimer formation and subsequent actin cytoskeletal remodeling. Overall, these new findings suggest the role of vinculin isoforms in connecting cytoskeleton structural alterations with ECM stiffening and may inform potential therapeutics for treating ECM stiffening-related pathological conditions.

Chem-4

Effects of chaperones and protein-protein networking on mitochondrial protein folding

Djuan Tinsley, Manoj Prasad

Research Mentor: Dr. Manoj Prasad

Mitochondria are well known for the synthesis of steroid hormones. The synthesis of steroid hormones is essential for the survival of all species. The process of steroid hormone synthesis is initiated with the movement of cholesterol from the outer to inner mitochondrial membrane. Most of the mitochondrial proteins are synthesized in ribosome and are transported to different compartment of mitochondria. During transportation of these mitochondrial proteins, a unique folding of proteins is required to enter mitochondrial import channels. Sometimes this unique folding pattern is also required for dual activity of some mitochondrial proteins. During the transportation to mitochondria, a specific and proper protein folding is a cumulative effect of chaperone and many other proteins expressed on the transportation pathway. The expression and concentrations of proteins residing in the surroundings of mitochondrial membrane regulates the folding of proteins, hence regulating the transport mechanism. Biochemical and biophysical approaches using statistical analysis are used to determine the effect of protein

expression and concentrations on mitochondrial protein folding.

Chem-5

Detecting the presence of a drugs through mitochondrial protein analysis

Paige Dunans, Manoj Prasad,

Research Mentor: Dr. Manoj Prasad

Mitochondria, which occur in all cells of animals, plants, and fungi, are double-membrane subcellular organelles that are responsible for the production of ATP and steroid hormones in the body. Mitochondria are very sensitive organelles and a change in mitochondrial proteins can be detected using Western Blot analysis. Use of drugs will change the expression and relative ratio of various mitochondrial proteins involved in steroid hormone biosynthesis. Western blot can be used as a screening test as it gives a quicker result instead of further time-consuming tests.

Measurement of mitochondrial protein expression may provide a useful tool to drug-protein interaction studies. Western blot analysis using gel electrophoresis is one of the most extensively used technique to check the expression of variety of proteins and effect of various drugs molecules on these proteins because it is cost efficient and have multiple matrices. This technique is used to detect the existence of substances such as peptides, proteins, antibodies, and hormones. In this research, Western blot analysis using Gel electrophoresis was performed to test presence of a drug and its toxic effect on mitochondrial proteins.

Chem-6

Phil Spector Homicide Case: Reconstructed in Virtual Reality

Kendall Kennerly-Hogan, Shanequa Jenkins, Ninoshka Marciano Karla-Sue Marriott, PhD.

Research Mentor: Dr. Karla-Sue Marriott

In the early hours of February 3, 2003, Phil Spector was found with the body of Lana Clarkson in his home. The authorities were notified by Spector's driver because he heard the sounds of shots firing from the home. Clarkson's body was found slouched over in a chair covered in blood and at her feet was a .38 Colt cobra revolver. The medical examiner performed an autopsy and came to the conclusion that Clarkson had the Colt revolver forced into her mouth, the recoil shattered her top front teeth, and the bullet severed her spine (region around the cervical vertebrae), resulting in an instant death. Bloodstains and gunshot residue were present on both the weapon and chair where Lana Clarkson's body was found slouched. The scene showed exit wound spatter from Clarkson's head. In this project we used virtual reality to recreate the crime scene to determine the direction and angle of the gunshot, and to assist in presenting a theory as to what happened to Ms. Clarkson. 3-D virtualization offers the ability to provide us with a first-person, realistic interaction with experiential content. The blood spatter simulator used, allowed us to virtually step into the shoes of the suspect and re-enact motions and actions suspected in the crime event.

Chem-7

Detection of mitochondrial dysfunction and toxicity using western blot protein analysis.

Nikia Mitchell, Manoj Prasad,

Research Mentor: Dr. Manoj Prasad

Steroid hormones are essential for the survival of all vertebrates. The synthesis of these steroid synthesis takes place inside the mitochondria. Mitochondria are universally known for its synthesis of ATP (Adenosine Triphosphate), but the organelle is much more versatile. Many mitochondrial proteins, along with other nuclear gene products assist in the functionality of the organelle. Any change in the production of steroid hormone, may result in metabolic diseases such as child birth disorders and hypertension and is fatal for the survival of species. Our research focuses on detection of mitochondrial dysfunction and toxicity using western blot

protein analysis method. Mammalian cells used for the experiments are grown in the lab using cell culture.

Since, mitochondria are very sensitive organelles, a change in mitochondrial surroundings (i.e. salt concentration, temperature, pH) may change mitochondrial protein expression. Some harsh conditions may create mitochondrial dysfunctions that can be detected using western blot analysis. Various drug molecules are used to incubate with cells followed by mitochondrial isolation from the test cells. This analysis will include determining whether there is a change in mitochondrial viability and respiration due to presence of external factors like drug concentrations. The mitochondrial protein concentrations and relative proteins ratios are analyzed by conducting the protein gel electrophoresis experiments and western blot analysis.

Chem-8

Simultaneous Two-Gun Suicide: Reconstructed in Virtual Reality

Torri Saunders, Dhimani Still, Jarod Cox

Research Mentor: Dr. Karla-Sue Marriott

Blood spatter analysis is a method used by forensic investigators to aid in determining what happened at a particular crime scene. Blood spatter analysis of a crime scene can assist in determining victim and suspect location, posture, and height, as well as, how many suspects were present, and the type of weapon used to create the spatter. In this project, the scene chosen was a Two-Gun Suicide by Simultaneous Shots to the head. In the year 2016, the Center for Disease Control, CDC, stated that 22,938 people committed suicide using a firearm. A Vizitech virtual reality (VR) avatar-based module was used to visually and kinesthetically step into the shoes of the victim to better understand the physical possibilities associated with suicide scene investigation. The weapons found at this actual suicide scene and used within VR were a Smith & Wesson caliber 9mm and a .357 Magnum revolver. In virtual reality, the researchers were able to calculate the gunshot

trajectory, as well as, analyze and determine the origin of various different blood spatters via experiments performed using the VR blood spatter simulator. The results of this research indicate that virtual reality blood spatter simulations, can produce valuable data to be presented in court along with actual blood spatter evidence documented at a crime scene to support a theory. Additionally, experiments that we are not able to safely conduct currently such as gunshot projectile experiments can now be safely conducted in this virtual setting.

Chem-F-1
Chemistry Faculty

Determination of Manganese Superoxide Dismutase by Flame Atomic Absorption Spectroscopy

Dr. Cecil Jones

The objective of this work was to determine if a pre-concentration technique is required for measuring the concentration of manganese superoxide dismutase (MnSOD) in aquatic life by Flame Atomic Absorption Spectroscopy (FAAS). MnSOD is an enzyme that serves as a key component of our oxidative defense system, which protects us from biological problems associated with reactive oxygen species (ROS). The superoxide radical is a key ROS that can interfere with several critical biological pathways. MnSOD catalyzes the dismutation of superoxide by the following equation: $2O_2^{\cdot -} + 2H^+ \xrightarrow{SOD} H_2O_2 + O_2$

FAAS is the instrumental technique that was employed to measure the amount of manganese in cytosolic and mitochondrial SOD from fish samples. This method is being evaluated for early detection of environmental pollutants which trigger oxidative stress in exposed animals. The activity of MnSOD is expected increase in the presence of xenobiotic materials. The light source in FAAS generates a resonance line of metals to induce excitation of analyte in aqueous samples. Qualitative analysis is achieved by analyte absorption of this line and quantitative analysis is accomplished by the extent to which the line has been attenuated by the sample.

The efficacy of this method was evaluated by comparing the linearity, calibration sensitivity and detection limits with that of other metals commonly measured by FAAS.

Engineering Technology

Engg-1

Analyzing Decision-making using Len%Ű's Model

Kennedy Garrett

Research Mentor: Dr. Steven Jiang

Food insecurity is a major problem that affects millions of people in the United States and around the globe. At the forefront of the battle to eradicate this humanitarian crisis, nonprofit organizations like the Food Bank of Central and Eastern Carolina are managing food supply chains to distribute food to local communities in the 34 counties they cover. To advance their mission of leaving no one hungry they have partnered with the NSF-funded FEEED project to find innovative solutions to fighting hunger. In this research, we studied decision making at a local food bank and attempted to model judgement policy using case studies. Three experienced decision makers were asked to make categorical judgements from a set of 21 case studies on food distribution to counties using four cues. A multiple logistic regression analysis with variable selection found one statistically significant variable at alpha 0.05 confidence level. This finding matched with feedback given by participants in the post study responses. The resulting model can be used to estimate the probability of taking action on distribution strategy as percent difference varies.

Engg-2

Developing a method that stabilizing mice for spinal cord imaging, while maintaining a normal gait cycle

**Kelsey Walker, Kawasi Lett, Daniel Rivera
Chris Schaffer, Yu-Ting Cheng**

Research Mentor: Kawasi Lett

Spinal cord neural activity controls the limb motions that are necessary for locomotion. Essentially, spinal cord neurons fire to achieve

continuous motion in vertebrates, but the patterns of neural activity that achieve this control remain poorly understood. Correlating spinal cord neural activity with specific locomotor patterns will aid in elucidating spinal locomotor circuitry. Such experiments are done by holding a mouse by a chamber attached to the spine while they walk on a treadmill, enabling us to image neural activity patterns while tracking limb motion. It is important for us to understand if there is a difference in gait patterns between freely moving and spine fixed mice with surgical windows implanted on the spine. This question was addressed by conducting limb/gait video analysis of six points of interest on a mouse's hind legs, including the Iliac crest, hip, knee, ankle, foot, and toe regions. During this study, when comparing tail-held to spine fixed, we have found that the major points that are analyzed do not differ for more than 20 in angle differences. Although statistically, we can see that there is a change in patterns, it is vital to understand that each mouse is different, and many circumstances will affect the locomotion of a mouse.

Engg-3

How cost effective are electric cars in each U.S. state? Analysis of current and future conditions.

Mikis Mays, Roxana Javid, Bryan Knakiewicz

Research Mentor: Dr. Bryan Knakiewicz, Dr Roxana Javid

Plug-in Electric Vehicles (PEVs) could be the transportation of the future. Vehicles with battery-powered drivetrains strive to minimize air pollutants and greenhouse gas emissions because of their low output of said emissions. PEVs have one crucial benefit that sets them apart from other vehicle types, PEVs use batteries. With any product, there will always be inefficiencies and disadvantages. The purpose of this research is to notate the cost-efficiency of PEVs in each U.S. state. This was accomplished after becoming familiar with PEVs. This meant finding the number of PEVs, vehicle miles traveled, greenhouse gas (GHG), and air pollutant input data for PEVs (including Battery-Powered

Electric Vehicles (BPEVS)) and Plug-in Hybrid Electric Vehicles (PHEVs) in years 2017 and 2030 (where year 2030 is an estimated projection). Next, the input data was placed in the Alternative Fuel Lifecycle Environmental and Economic Transportation (AFLEET) tool. Afterwards, a detailed map of the United States was created using the output data from the AFLEET tool that portrays which states would benefit from PEVs and which states would not benefit. The previously mentioned map propagated the conclusion that PEVs are currently too expensive to become more beneficial than conventional vehicles (CV). The map depicted that only 21 states, 42% of the U.S., showed benefit, while the other 29 states showed negative benefit. We also discovered that there is little correlation between the cost associated with the implementation of PEVs and the percentage of renewable resources used for electricity generation. Possible industry impacts could be the introduction of a reformed environmentally friendly manufacturing process and the research and development of low-cost high-density batteries for PEVs. The effects of the aforementioned industry impacts would lead to a decrease in the price paid by consumers purchasing PEVs.

Engg-4

Designing Socially Assistive Robot Behaviors for Preventive Healthcare

Valesia Davis, Ittaty Aguilar-Guzman

Research Mentor: Dr. Wing-Yue Geoffrey Louie

Robots are widely used in many industries including manufacturing, healthcare, service, space, social and personal robotics, and education. The NAO robot is the most commonly used humanoid robot for multiple purposes. It is also fully programmable to execute human-like actions, for instance, walking, talking, listening, and recognizing facial features. Our main goal for our lab project is to program the NAO Robot to encourage people to engage in more healthy activities such as taking a walk, drinking more water, eating healthier foods, and exercising. With the use of different programs like Robotic

Operating System (ROS) and Python, we are able to create messages and codes in order for the NAO robot to implement those actions.

Engg-5

Structural Simulation Using CATIA

Miajah Detoles, Mir Hayder

Research Mentor: Dr. Mir Hayder

In this study, a static analysis of a cantilever beam was conducted by CATIA. A rectangular beam with a cross-section of 7 in. x 3 in. and a length of 84 in. was created in CATIA. The material assigned to the beam was steel. Simulation was carried with a uniform distributed load of 10,000 lbs. Since the beam was cantilever, one end of the beam was fixed end the other end was kept free. Results for displacement, stress, yield strength, and Factor of Safety (FS) was produced. The maximum displacement of 0.15203 in. and minimum displacement of 0 in. was found at the free end and the fixed ends, respectively. The maximum and minimum stresses were found 7535.74 psi and 29.8572 psi, respectively. The locations of the maximum and minimum stresses were opposite to those of maximum and minimum displacements. The resulted yield strength was found as 36259.434 psi with a FS of 4.8.

Engg-6

Mathematical Modelling of a Small Satellite Control System

Greg Amos, Spyros Andreou

Research Mentor: Dr. Spyros Andreou

Cube Satellites, also known as CubeSats, are an increasingly popular low cost alternative to traditional space hardware. Their small size, low weight, and use of off the shelf components allows for the pursuit of scientific and other research missions in low earth orbit that would otherwise have been financially inaccessible for smaller scientific and academic organizations. The focus of this presentation is on the

mathematical modeling of a theoretical feedback loop control system for a small satellite, as part of a larger project involving the modeling and development of a control system for such satellites.

Engg-7

Mitigation of Ground-borne Structure Vibration by Particulates

Hasson M. Tavossi

Absorption of vibration by particulates as a function of frequency are studied to prevent transmission of ground-borne vibrations into the building structures. Absorption of vibration by particulates depends on their mechanical properties, particle size distribution, shape and degree of compactness. The goal is to show that building vibrations can be damped by surrounding them with particulates layers. It is known that particulates behave as a band-pass filters for vibrations. It has also been observed that the vibrations outside their passband range of frequencies are strongly absorbed. Some particulates can have a band-gap, where frequencies in the band gap range are strongly absorbed. Samples of uniform size particulates are subjected to sinusoidal vibrations at different frequency and amplitude. Their absorption characteristics versus frequency are measured for different particle size, thickness, and orientation in vertical and horizontal directions. The main goal is to model optimal dampers for building structures to mitigate transmission of external vibrations.

Engg-8

The Relationship Between Autonomous Vehicles and Distracted Driving

Sade Shofidiya, Dr. Bryan Knakiewicz

Research Mentor: Dr. Bryan Knakiewicz

There are many claims that the emerging smart-technologies in vehicles will help to stop distracted driving. New car models are

continuously being constructed with automated features that provide assisted driving for the users. These autonomous vehicles are also equipped with software similar to applications found on mobile devices. Will the smart cars reduce distracted driving or increase distracted driving due to the user's reliance on the assisted automated features? The objective of this research is to examine the relationship between automated features on vehicles and distracted driving. This research is an interdisciplinary study of engineering, psychology, and transportation. More specifically, this research is an empirical study (survey based with a sample size equal to 300) that is targeted at both urban and rural areas. The sample consists of licensed drivers of automated vehicles aged 18 and older of the male and female sex. A conceptual model will be used with the following latent exogenous variable: autonomous vehicle is assumed to have an influence on the endogenous latent variables: distracted driving, mind wandering, and cognitive failures. Validated questionnaires from transportation and psychology literature will be utilized in the study. The hypothesis of this study is that autonomous vehicles will have a positive relationship with distracted driving, mind wandering, and cognitive failures. A structural equation model, multiple linear regressions, and correlations will be used to analyze the relationships between the latent variables. The research is currently in progress, and the data collection period was terminated on December 12, 2018. The results were analyzed during the first two weeks of January. It is expected that autonomous vehicles will have a positive relationship with distracted driving, mind wandering, and cognitive failures. Future research involves objective measures of the variables through the use of autonomous driving simulators with the participants if future funding is obtained.

Engg-9

Studies on Distribution of Metallic Elements in Cocoa and Cocoa Growing Soils of Trinidad & Tobago

Paramasivam Sivapatham, Caleb A Aron, Umaharan Pathmanathan, Gideon Ramtahal, Butler Chauntilena

Research Mentor: Dr. Paramasivam Sivapatham

Elemental contamination and accumulation are serious concerns with respect to soil, plant, and water. In recent times, certain heavy metals are gaining importance due to their impact on human health, and cadmium, Chromium and Lead are some of them to mention. Cadmium levels in cocoa have raised the concern of the European Union (EU), which is seeking to regulate the amount of Cadmium in various foodstuffs by 2019 by imposing maximum allowable levels. While human bodies are designed to tolerate a certain amount of cadmium, too much of this heavy metal can cause a host of problems, from kidney failure to brittle bones. Cocoa is one of the important plants as it contributes one of the important ingredients (i.e., Cocoa powder) in most food items we consume in our daily life at least in small amounts. This presentation highlights briefly the findings related to the distribution of selected heavy metals and through the preliminary research studies conducted in soil and plant samples collected from Cocoa growing soils of Trinidad and Tobago (home for World Gene Bank of Cocoa) maintained by the University of West Indies. This presentation also showcases the effective use of high tech instruments available at SSU for this internationally important collaborative research, training and mentoring of local and international students involved in this research endeavor.

Engg-10

Patient specific cardiovascular modeling

Casey Marcus Riddle, Dr. Krishnamurthy, Arian Jafari

Research Mentor: Dr. Krishnamurthy

Cardiovascular simulation has attracted much attention among researchers for over the past couple decades, but the primary practices would only examine the left and right ventricles of the heart due to complexity of the atrial region. The goal of the project aims to advance translational medicine with the help of personalized patient specific cardiovascular simulation models. We use interactive parametric modeling to create the geometric model of the left ventricle. By knowing the nodal deformation of the left and right ventricles in a full cardiac cycle obtained from the finite element analysis, we were able to build the Aorta for the fluid dynamics of the blood inside the circulatory system. modeling which is commonly used in computer graphics is used to build the Aorta wall and afterwards we attach it to the left ventricle's NURBS patches. Rhino and grasshopper plug-in as a strong tool in is geometric modeling is used to ease this aim. This work is mainly focusing on the steps are needed to take to create the Aortic wall based on the provided left ventricle geometry.

Environmental Sciences

ENS-1

Heavy Metals in Sediments Collected from Savannah River Estuary in Savannah, GA

Jaya Grant, Tiffany Davis, Markelle Fuller, Frances Arthur, Antonio Macmillan and Kenneth Sajwan

Research Mentor: Dr. Kenneth Sajwan

The Savannah River is a major river in the southeastern United States, forming most of the border between the states of South Carolina and Georgia. The Savannah River drainage basin extends into the southeastern side of the Appalachian Mountains just inside North Carolina, bounded by the Eastern Continental Divide. The river is around 301 miles (484 km) long. Two major cities are located along the Savannah River: Savannah, Georgia, and Augusta, Georgia. Through the building of several locks and dams, and upstream reservoirs, also, the Savannah River was once navigable by freight barges between Augusta, Georgia (on the Fall Line) and the Atlantic Ocean; maintenance of this channel for commercial shipping ended in 1979, and the one lock below Augusta has been deactivated. The Savannah River is tidal at Savannah. Downstream from there, the river broadens into an estuary before flowing into the Atlantic Ocean. The area where the river's estuary meets the ocean is known as "Tybee Roads". The Intracoastal Waterway flows through a section of the Savannah River near the city of Savannah. Over the year of industrial activities the Savannah River water has been polluted. In Savannah itself due to heavy industrial factories/complexes are considered as one of the main polluters of Savannah River. The recent dragging by the USACE of Savannah River has also have several detrimental effects. The main objectives of this study were to collect sediments from various locations in Savannah River Estuary and monitored these sediments for various inorganic pollutants.

ENS-2

Composition of Trace Elements in Influent, Biosolids and Effluent from Nine Wastewater Treatment Plants in Savannah, GA

Markelle Fuller, Jaya Grant, Tiffany Davis, Frances Arthur, Antonio MacMillan and Kenneth Sajwan

Research Mentor: Dr. Kenneth Sajwan.

The city of Savannah is located on the southeast corner of the state of Georgia. Metropolitan Savannah and its suburbs all together have a population of over 450,000. There are nine wastewater treatment plants (Crossroads, Georgetown, President Street, Tybee, Wilshire, Garden City, Port Wentworth, Richmond Hill, and Pooler) in Savannah and which serve the daily domestic wastewater treatment needs of this population. Savannah's storm water drainage systems are very well connected with the wastewater lines. All these plants have the capacity to accommodate additional storm run off during high rainfall events. Recently, there has been a push to recycle the treated sludge and treated water from these facilities for irrigation to lawns, gardens and/or golf courses. However, there have also been some serious concerns for reusing both treated sludge and treated water that may contain heavy loads of toxic metals and organics. The main objective of this study was to evaluate the trace elements concentrations in wastewater from nine wastewater treatment plants in Savannah, Georgia and compare these results with our past five year studies. The result of this study indicated that, similar to our previous years, we still observed elevated levels of pH, salinity, $\text{NO}_3\text{-N}$, and trace elements concentrations in influent, biosolids, and effluent waters from these wastewater treatment facilities. It is a matter of great concern that, despite stringent environmental regulations, there has been no improvement in wastewater quality for this time period. Therefore, we suggest that one has to be very careful in reusing the biosolids, and/or effluent waters for land application to avoid cross contamination of various trace elements from these potential sources.

Mathematics - Bachelors

Math-B-1

Statistical Modeling to Assess the Association between Abnormal Pap/HPV Test Results and Marital Status in The United States, NHIS 2015

C'Asia Griffin, Dr. Sujin Kim,

Research Mentor: Dr. Sujin Kim

Human papillomavirus (HPV) infection is the main cause of cervical cancer. In the United States, almost 12,000 women are diagnosed with cervical cancer and 33.3% of them die every year. According to Centers for Disease Control and Prevention (CDC), HPV prevalence is associated with marital status. The purpose of this study is to assess how marital status is associated with abnormal Pap/HPV test results. The National Health Interview Survey 2015 was used in this research. The research study population included 7,709 adults who had taken Pap/HPV tests and had answered to marital status as "Never Married" or "Currently Married." The SPSS 18.0 was used to recode, compute, and analyze the data. 2 x 2 contingency chi-square and binary logistic regression were applied where appropriate. This study found that there was strong relationship between marital status and abnormal Pap/HPV test results and we determined that woman with "Currently Married" status had lower odds of abnormal Pap/HPV test results.

Math-B-2

Fourier Spectral Exponential Time Differencing Method for Numerical Simulations of the Multi-Dimensional Allen Cahn Equation

Daryl Harper, Harish Bhatt,

Research Mentor: Dr. Harish Bhatt

In this work, the Fourier spectral method in combination with exponential time differencing method is introduced for solving multi-

dimensional Allen-Cahn equation with no flux boundary condition. A Fourier spectral method is adopted for discretization of the space derivatives and exponential time difference method is used to integrate the resulting system of nonlinear ordinary differential equations. In order to investigate the performance of the method we investigate several numerical experiments on multi-dimensional Allen-Cahn equation. The numerical results demonstrate that our proposed method is stable and reliable to solve Allen-Cahn equation accurately and efficiently.

Math-B-3

Why is Cancer Higher in Non-Whites than Whites

Marcus Rogers

Research Mentor: Dr. Samuel Dolo

When it comes to non-smoking, people who do not smoke are more than likely to live a healthier and longer lifestyle. Non-smokers will not have to worry about lung cancer as long as they continue not to smoke. People do not know that another way to reduce your risks of cancer is also by eating a healthy lifestyle. Eating a healthy lifestyle of fruits and vegetables may reduce your risks of lung cancer according to research. Evidence also suggests that smokers can also protect themselves from lung cancer from eating a high diet in fruits and vegetables. Regardless if you smoke or not, there is still a chance that a non-smoker can die from secondhand smoke. According to research, there are two types of lung cancer, which are called squamous and adenocarcinomas. Adenocarcinomas is the type of lung cancer that appears in non-smokers and they do not have to smoke to receive cancer. Family history can also have an impact on people receiving cancer as well. If somebody has a family history of cancer, then there is a good chance that people in the family can be diagnosed with illness if it runs in the family. When it comes to blacks in general, we normally have a higher incidence and mortality when it comes to cancer than other races like whites, Asians and Hispanics. Based on the research, it is said that non-whites have lower perceptions of cancer risk

than whites. Family history of cancer is another way of how cancer can be lower in non-whites than it is in whites. Blacks are less likely to perceive increased risk due to family history of cancer than whites, or their black counterparts without a family history of cancer. When it comes to having a higher incidence, blacks normally has a higher risk in this population, which can be a major concern. It is also shown that Asians and Hispanics have lower all-site cancer incidence and mortality than whites. Perceived cancer risk (PCR) indicates that blacks who have a family history of cancer are not known to have increased perception of being diagnosed with cancer, unlike those who do not have a family history of cancer. Blacks, Hispanics, and Asians are known for having a lower risk than receiving cancer than whites based on their age and gender. Blacks have lower cancer risks than whites because they are more than less likely to have a member of the family to have cancer. Hispanics and Asians on the other hand, have a much higher risk of being diagnosed with cancer, because they are more than likely to have a family member who has cancer. It has been said that through cancer screening, non-whites are known to have a lower PCR than whites. Lower perceived cancer risk (PCR) is known to cause cancer in a smoker whereas higher PCR is known to less likely cause cancer in non-whites. People who have never smoked are most likely to have a much lower cancer risk besides those who do smoke and also have a much lower PCR. According to the article "Hispanics and Asians were less likely than whites to have smoke during their lifetimes, which, in turn, was associated with lower PCR compared to Whites". Asians and Hispanics are known to have a much lower risk than blacks and whites due to their family history of not being diagnosed with cancer and by living a healthy lifestyle and exercising.

Math-B-4

Approximate Solution of Nonlinear Duffing Oscillator by Using Adaptive Runge-Kutta Methods

Sammie Clayton, Abhinandan Chowdhury

Research Mentor: Dr. Abhinandan Chowdhury

Nonlinear Duffing equation, a well-known nonlinear oscillator has attracted remarkable attentions from researchers in recent decades mainly due to its applicability in modelling various engineering phenomena such as nonlinear vibrations of beams and plates, and vibrations induced by fluid flow. This mathematical model is a second order differential equation with nonlinear spring force used to describe the motions of a damped oscillator with a more complicated potential than in simple harmonic motion. In the present work, the Duffing oscillator equation is solved by using Runge-Kutta method in combination with an intelligent adaptive step-size routine, called Runge-Kutta-Fehlberg method. The solution results are compared with Runge-Kutta 4th order numerical method to investigate the accuracy and reliability of the adaptive method.

Math-B-5

Conquering Even Perfect Numbers Using the Tool of Finite Series

Gabrielle Sams, Mulatu Lemma,

Research Mentor: Dr. Mulatu Lemma

The patterns and properties formed by numbers have attracted the attention of mathematicians for a long time. For instance, they have noticed that some numbers are equal to the sum of all their factors (not including the number itself). Such numbers are called perfect numbers. The search for perfect numbers began a long time ago with the first four perfect numbers being 6, 28, 496, and 8128. In this paper, we will explore some important properties of perfect numbers. We give easy-to-follow proofs of theorems using finite series and give our own alternative proof of the well-known Euclidean Theorem (Theorem I). We also study other important theorems which play significant roles in the mathematical theory of perfect numbers.

Mathematics - Faculty

Math-F-1

A Semi-Analytical Approach to Determine the Velocity Potential Around Two Spheres in Arbitrary Motion Through an Ideal Fluid

Abhinandan Chowdhury, Mark Delcambre,

Research Mentor: N/A

Potential flow around two non-overlapping spheres in arbitrary motion through an unbounded inviscid liquid is considered. Bi-spherical coordinates are introduced to transform the Laplace equation as well as the boundary conditions to these coordinates. The fact that one of the coordinate lines is going through the spherical surfaces enables us to seek the solution in Legendre series with respect to one of the bi-spherical coordinates. The Legendre spectral method is shown to have an exponential convergence which is confirmed by the computations. The efficiency is so high that even for the hard cases of two almost touching spheres, an accuracy of $E-10$ is achieved with as few as 20 terms in the expansion. Stream functions instead of velocity potentials are used for better demonstration of the flow direction of the inviscid liquid, and the contour plots of the streamlines are presented graphically.

Math-F-2

Mathematical Model of Malaria Lifecycle

Shinemin Lin, John Hall

Research Mentor: N/A

On April 12, 2018, Dr. Ana-Maria Croica gave a presentation as NSF-Target Infusion Program Seminar Series. Her topic was "An Optimal Control Model to Reduce and Eradicate Anthrax Disease in Herbivorous Animals." This research is based on Saad-Roy's Mathematical Model of Anthrax Transmission in Animal Population. I was impressed by her mathematical model. Therefore, I would like to apply her process to construct a mathematical model for the Malaria

lifecycle. Malaria lifecycle includes two major parts: human host and infected mosquitos. In this project, we first created two sub-models: human host sub-model and mosquitos sub-model. Then these two sub-models are combined into one Malaria Lifecycle model. We also considered the seasonal effect on mosquito's birth and the effects by immunization and quarantine human host of malaria.

Math-F-3

A Mathematical Model of Anthrax Transmission

Wondimu Tekalign

Research Mentor: N/A

A general mathematical model of anthrax (caused by *Bacillus anthracis*) transmission is formulated that includes live animals, infected carcasses, biting flies, human activity and spores in the environment.

Mathematics - Masters

Math-M-1

Fascinating Beauty of Mathematics

Dustin Allard, Mulatu Lemma,

Research Mentor: Dr. Mulatu Lemma

In this paper, we take a look into the beauty of number patterns that occur naturally.

Math-M-2

Dynamic Modeling for Real Life

Lewis B. Hall, Jr

Research Mentor: Dr. Shinemin Lin

Change is one of the consistent things in life. As time continues to move forward everything is different from what it once was. Differential equations can be used to calculate these changes at any point in time. A great way to creatively

develop a clear picture of the changes is by mathematical modeling. With these models, it is possible to understand the process and path of the change and predict future outcomes. Using difference quotients to approximate derivatives, we will develop a system of differential equations to construct mathematical models that can be applied to real world situations. In this presentation we will discuss modeling development followed by a few examples to show we can create mathematical models whenever we have situations in the real world.

Math-M-3

Mulatu Number

Ramond Quillet, Mulatu Lemma

Research Mentor: Dr. Mulatu Lemma

The Mulatu numbers which are sequences of numbers of the form, 4,1, 5,6,11,17,28,45... have been attracting a lot of research interest due to their amazing properties and patterns. Some of these properties and patterns have already been studied and reported in recently published papers. In this paper, we investigate additional properties and patterns of these fascinating numbers. Furthermore, many beautiful mathematical identities involving the Mulatu numbers in relation with the Fibonacci numbers and the Lucas numbers will also be explored.

Math-M-4

A Study on the Mathematical Ability of Microcontrollers

Dustin Allard, Abhinandan Chowdhury

Research Mentor: Dr. Abhinandan Chowdhury

The purpose of this project is to improve the mathematical ability of Arduino Uno, an open-source microcontroller board based on the Microchip ATmega328P microcontroller and developed by Arduino.cc. Enhancing the ability of the microprocessor to use simple math functions to accomplish basic tasks will eventually allow us to expand its ability to tackle

more complicated tasks. It will be demonstrated that Arduino Uno, with the aid of an ultrasonic sensor and a basic Caesar Cipher detects distance, encrypts the information and displays it on a local computer. Programming language C++ is used to receive the input data from the sensor and display the encrypted data on the local computer. Future study will include using deeper encryption autonomously and have the Arduino map its surroundings.

Math-M-5

Numerical Solutions of Gardner Equation by Modified Exponential Time Differencing Method

Leo Degon, Abhinandan Chowdhury

Research Mentor: Dr. Abhinandan Chowdhury

In this work, we seek the numerical solution of the Gardner equation (combined KdV-mKdV equation) which studies various areas of physics including plasma physics, fluid dynamics, quantum field theory, solid state physics and others. We aim to solve some initial boundary value problems constructed for the Gardner equation by the modified exponential time differencing method proposed by Kassam and Trefethen. The test problems are derived from some analytical studies to validate the efficiency and accuracy of the suggested method. Accuracy of the employed numerical scheme for this class of equations is assessed in terms of global relative error and L-infinity norms of error. Numerical experiments demonstrate the accuracy and robustness of the method which can be further used for solving other nonlinear problems.

Marine Science - Bachelors

MS-B-1

Lionfish? Where, When, Why?

Aliyah Beach

Research Mentor: Dr. Pam Schofield

Lionfish? Where, When, Why?

The lionfish, *Pterois volitans*, is a Native species in the Indian Ocean but an invasive species along the southeastern coast from Florida to North Carolina. This species is a top predator in coral reef regions and many other habitats. They are ambush predators, and they consume several important species to both the fisheries and the reefs. There are issues that the lionfish are drastically impacting in the coral reefs which threaten them and endanger several other species. The purpose of this project is to help determine the location that lionfish are populating. Locations of lionfish were provided by Dr. Pam Schofield of United States Geological Survey (USGS) and will be mapped in ArcGIS 10.6.1. I expect the results to depict the movement of lionfish and potential hotspots for them and help others understand the issues dealing with this species. The information given within the project can go on to be presented on a larger scale and lead to discoveries and enrichment of the coastal waters and coral reefs.

MS-B-2

Invasive Lionfish

Tiffany Davis, Dr. Tara Cox,

Research Mentor: Dr. Tara Cox

Lionfish, *Pterois volitans*, are venomous coral reef fish who are natively found in the Indo-Pacific area but have become an invasive problem in Southeast US. These lionfish are harmful to our environment and other sea creatures. The purpose of this research is to map the spread of the invasive species lionfish in Southeast US. Data were provided by Dr. Pam

Schofield at United States Geological Survey (USGS) and mapped in ArcGIS 10.6.1. Anticipated results for this data is that we are able to map the spread throughout the southeast and find hotspots of these invasive species. With these data, researchers can find a way to stop these invasive species from harming our ecosystem.

MS-B-3

Invasion of *Phragmites australis*

Jordan Dishmon, Dr. Tara Cox

Research Mentor: Dr. Tara Cox

Invasive species are a plant or animal that tends to dominate and quickly spread in an environment where it is not native but introduced. Invasive species are dangerous to the environment because they may take nutrients from native organisms in that ecosystem. The purpose of collecting these data is to inform the public of recorded sightings of *Phragmites australis* which is a plant invasive species in the Northern Hemisphere. Locations of *Phragmites australis* were obtained from EDDMaps, a citizen-science app, and mapped in ArcMap 10.6.1 based on the year of appearance between 2008-2018 to determine the extent and rate of geographic expansion. The anticipated results are that *Phragmites* are continuing to grow in the recorded sighted areas but are not invading into new areas. This data map will be helpful in the future for comparison of future data to investigate the spread of the invasive plant species *Phragmites australis*.

MS-B-4

***Dreissena polymorpha* and their boundless limits**

Teiyana Gordon

Research Mentor: Dr. Tara Cox

Dreissena polymorpha, also known as Zebra mussels are mollusks that attach themselves to underwater objects; they are an invasive species

causing ecological changes within US waterways. The zebra mussel is an Eastern Europe and Western Russia native. They were brought to the United States through the Great Lakes from contaminated cargo in 1988; they were first discovered in the Duluth/Superior Harbor in 1989. My purpose is to track the movement and territory that the mussels have invaded by mapping locations over time in ArcMap 10.6.1. My anticipation is to have a clear track showing the spread over time in which the zebra mussels have made and the species and landmarks that they have overtaken.

MS-B-5

Common Bottlenose Dolphin Tursiops truncatus Sightings by Season

Ezekiel Horton, Tara Cox

Research Mentor: Dr. Tara Cox

The common bottlenose dolphin, *Tursiops truncatus*, is found in temperate and tropical waters. In Savannah common bottlenose dolphins are mostly found in waters near Tybee Island and the Savannah River. The purpose of the research is to find out if common bottlenose dolphin distribution in the waters near Savannah, GA varies by season, and if dolphin group size varies by season and location. I hypothesize that dolphin group sizes vary by season and location. Sightings from 2009-2017 boat-based surveys were mapped in ArcGIS. Pinpoint maps will be made for each season. I think that seasons such as spring and summer drive bottlenose distribution. I believe there will be seasonal differences because of migration, and I believe there will be group size differences due to mating. I think larger groups of dolphins will be more in the open water. I think smaller groups of dolphins will be in smaller creeks in the winter.

MS-B-6

Snakehead spread in the United States

Justin Jackson

Research Mentor: Dr. Tara Cox

Snakeheads, *Channa argus*, are an invasive species in U.S. waterways. These fish are eating the natural food in local waterways successfully disrupting the food chain. Snakeheads which are native to China, Russia, and Korea are becoming populous in states surrounding the Potomac River. Some of these states are Maryland, Virginia, and Washington D.C. Data from a citizen science database, EDDMaps were mapped in Arc Map 10.6.1. Results show that Snakeheads are expanding their invasive range throughout the United States. The use of maps can allow researchers to easier pin point higher percentage areas to capture these fish and remove them from the nonnative habitat they are living in. The purpose of this study was to use ArcMap to create maps showcasing where Snakeheads were being reported in the United States.

MS-B-7

Health of Common Bottlenose Dolphins Tursiops truncatus in Relation to Boat Density

Sarah Johnson, Tara Cox

Research Mentor: Dr. Tara Cox

Common bottlenose dolphins are considered sentinels of ecosystem health. The purpose of this research is to investigate the locations of healthy and unhealthy dolphins on Savannahs coast. Dolphin sightings from boat-based surveys between 2009 to 2018 were mapped in ArcMap 10.6. Distribution of unhealthy dolphins, defined as having neck or ribs visible, was compared to distribution of healthy dolphins. The expectation is for there to be a difference between the location of healthy and unhealthy dolphins, density of unhealthy dolphins being the highest where there are more boats. This research could add some support to the marine science field in Savannah by presenting an opportunity to study the locations of unhealthy dolphins and see what resources are not available to them and what can be done to improve their quality of life.

MS-B-8

Hotspots of Traffic Accidents in Chatham County

LaShannon Lawson, Dr. Cox

Research Mentor: Dr. Tara Cox

Chatham County has many accidents that can be avoided by using different routes. My purpose is to show why tractor trailers should avoid certain streets due to accidents and traffic congestion. I will map information from Department of Transportation from Chatham County accidents from 2015, 2016 and 2017 in ArcMap 10.6.1 to identify hotspots. I anticipate that Bay Street is not the best street for tractor trailer to be on due to delays such as accidents and traffic congestion. With the data that were collected, a logistics coordinator will be able to use these data to direct tractor trailers to the most efficient routes through Chatham County.

MS-B-9

Spatial patterns of common bottlenose dolphins, *Tursiops truncatus*, with ribs and/or neck visible compared to healthy dolphins

Kristen McCauley, Dr. Tara Cox

Research Mentor: Dr. Tara Cox

The common bottlenose dolphin, *Tursiops truncatus*, is found along the East coast of the United States including the Savannah estuaries and coasts. Dolphins with ribs, neck, or both visible can indicate an unhealthy dolphin population; determining a spatial pattern could help us determine why. The purpose of this study was to determine the spatial patterns of healthy and unhealthy common bottlenose dolphins. Boat-based surveys were conducted in the estuarine waters near Savannah, GA between 2009 and 2015. Sighting locations of common bottlenose dolphins were mapped in ArcMap 10.6.1. Dolphins with no rib or neck visible were found in the small and large creeks and open sounds, while dolphins with both ribs and neck visible were found in small creeks. Dolphins with

only ribs visible were mainly found in large creeks and open sounds while dolphins with only necks visible were found in small creeks and open sounds. Healthy dolphin populations indicate a healthy ecosystem and if the Savannah rivers and estuaries have almost half of their dolphin populations with health issues, then it could potentially affect those living around those areas. Distinguishing patterns of where the unhealthy dolphins are could help us determine what we could do to help the marine ecosystem and in return help us.

MS-B-10

Alligator *mississippiensis* distribution along trails at the Savannah Wildlife Refuge as compared to human recreational use

Chelsea Spaulding, Dr. Tara Cox

Research Mentor: Dr. Tara Cox

American Alligator (*Alligator mississippiensis*) and human interactions are on the rise as a result of human activity and development along alligator habitat. This is especially true in recreation areas, such as wildlife preserves, where wildlife and human interactions are most likely to occur. The purpose of this study is to compare the density of human recreational use on the trails, such as driving, walking, or biking, to the density of alligator presence along the trails of the Savannah Wildlife Refuge. Alligator locations were collected throughout the months of February and March 2019 and mapped in ArcGIS 10.6.1. The data will be compiled in a graduated symbol map to show where both humans and alligators are most prevalent and may be more likely to interact with one another. The intended use of these data is for people to understand where they might need to be more cautious and aware of their surroundings. Park personnel might also find the information of use when looking at where to survey and monitor guests and wildlife.

MS-B-11

The Circadian Rhythm of Snapping Shrimp in an Estuarine Habitat

Alexandria Ambrose, Emily Weigel, Amanda Kaltenberg

Research Mentor: Dr. Amanda Kaltenberg

The ocean is abundant with anthropogenic and ambient noise from many sources. One significant source of ambient noise in shallow coastal habitats, coral reefs, and oyster reefs. Snapping shrimp are in the family Alpheidae, but only species of the genera *Alpheus* and *Synalpheus* are known for producing such loud sounds. Snapping shrimp are often considered a constant background noise in many soundscapes and often removed from signals analyzed for fish activity. Most animals have a circadian rhythm to their behavior, which can be categorized into intrinsic (based on internal instincts) and exogenous (based on environmental cues). This project tested the hypothesis that snapping shrimp calls have a circadian rhythm in an estuarine habitat with diurnal and tidal influences. A passive acoustic hydrophone was used to record snapping shrimp calls from an estuarine soundscape over sunrise and sunset times and at high and low tide. Results show that snapping shrimp calls were more active at sunset and may have influences based on the tidal state as well. The conclusion that snapping shrimp may not be a constant background noise in soundscapes is significant to the interpretation of future passive acoustic studies. Future studies include observing the circadian rhythms of snapping shrimp with influences of other organisms and temperature.

MS-B-12

Oyster Distribution and Sea Level Rising

Darian Braddy

Research Mentor: Dr. Tara Cox

Oyster Distribution and Rising Sea Level

In the ocean, there are many important species that exist, including Eastern Oysters, *Crassostrea*

virginica. Oysters are environmental sentinels meaning they filter estuarine waters, intaking the plankton and detritus; one oyster can filter about 50 gallons of water in one day. They also provide habitat for other sea creatures such as barnacles, fish, and even other oysters. Since oysters began being harvested drastically in the early 1800s, only about 1% of Eastern Oysters of that population exists today. The tides on the Georgia coast are large meaning that the Eastern Oysters close during low tide when they are exposed and unprotected by the water and open back up during high tide to feed. Oyster distribution data from Georgia Department of Natural Resources (DNR) were mapped in ArcMap 10.6.1 and projected in NAD1983 Stateplane Georgia East FIPS 1001. These data will then be overlaid with the mean, 1 foot, and 10 feet predicted sea level rise by the National Oceanic and Atmospheric Administration (NOAA). The map will show the location of Eastern Oysters at low and high tides of different sea levels, and that there are more exposed at low tide and less at high tide because the sea level is higher and therefore, more are underwater. This map can be used in the future to compare whether the higher sea levels will provide better circumstances for more oysters to form or if poor water quality and overharvesting will cause Eastern Oyster population to continue to decrease.

MS-B-14

Outrunning sea-level rise: a study of seasonal sediment accretion in salt marshes of Savannah, GA

Nathaniel Campbell

Research Mentor: Dr. Carla Curran

Salt marshes provide nursery grounds for many commercially important organisms. Many of these tidal marshes are vulnerable to climate change, including accelerated sea-level rise, possibly leading to permanent salt marsh inundation as well as habitat relocation. The purpose of the present study was to measure the rate of sediment accretion within the marshes of Country Club Creek and to compare that to the annual sea-level rise recorded at the NOAA tide

gauge at Ft. Pulaski, both near Savannah, GA. Feldspar marker horizon plots were established as per Cahoon and Turner (1989) along the southeast and southwest sides of the Marine Sciences dock in Country Club Creek in Savannah, GA to measure vertical accretion. A total of 3 cores were taken for each plot and the amount of sediment accretion above the feldspar was measured with a digital caliper (± 0.01 mm). Accretion rates between the zones of Country Club Creek were 34.57 ± 3.79 mm y⁻¹ at 2 m and 5.54 ± 2.27 mm y⁻¹ at 5 m. They are both above current sea-level rise measurements from Ft. Pulaski, GA (3.24 mm y⁻¹). Even with the current sedimentation rates, Country Club Creek is still eroding due to the high energy tides along the unvegetated lower banks of the marsh. Future studies with the addition of Sediment Erosion Tables (SET) placed within the bare banks of the marsh will help quantify the erosion that is occurring.

MS-B-15

Comparing two methods to characterize the chemical components of marine plastic debris

Dante Freeman, Ashok Deshpande, Jennifer Lynch, Nigel Lascelles, Davielle Drayton

Research Mentor: Dr. Hoskins-Brown

Microplastics as pollution in marine environments is a highly debated, but important, issue. Whether the pieces are fragments or nurdles, determining the history, origin, or previous use of microplastics is difficult. However, a good first step is identifying the type of plastic. Advances in analytical technologies have produced methods to identify the composition of microplastic pieces. This study focused on two methods, attenuated total reflectance Fourier transform infrared spectroscopy (ATR FT-IR) and pyrolysis-gas chromatography/mass spectroscopy. Both methods were used to analyze 24 microplastic samples found on the beaches of Hawaii. The samples were analyzed separately and the identities were not compared until analysis for all samples was complete. Both methods produced the same identities for 88% of the samples. Both

analyses included a sample in which an additional minor polymer was detected that was not found in the other method. Additionally, of 10 samples that could not be identified with ATR FT-IR, 9 samples were identified with pyrolysis-GC/MS. Pyrolysis-GC/MS was also able to identify additives in some microplastic samples, which was not possible with ATR FT-IR alone. Overall, both methods have advantages and one may be preferred depending on the goals of the study. However, the best results will come when both methods work collaboratively with each other and other methods.

MS-B-16

The effects of tidal stage and sediment color on the burial of Blackcheek Tonguefish *Symphurus plagiusa*

Colton Hamilton

Research Mentor: Dr. Mary-Carla Curran

Time of day and tidal stage have been shown to influence the burying behavior of some flatfish. Some experiments have found that substrate and color of both the sediment and the fish effects the burial and camouflage. The purpose of the present study was to find the effects of tidal stage, size of fish, and sediment color with the correlation of burial percentage of Blackcheek Tonguefish. The data collected were the percentage of the organism buried under the sediment, percentages used were 0%, 25%, 50%, 75%, and 100%. Data were collected during 1 high tide and 1 low tide for 2 consecutive days. The mean and standard deviation of high tide was $36.36 \pm 37.48\%$ of body coverage, while low tide was $56.82 \pm 33.86\%$. The mean and standard deviation of dark sediment is 50.00 ± 33.54 , while tan sediment is 38.64 ± 37.48 . The major finding of this study was that during low tide burying behavior was 56.82 ± 33.86 . A future study could be of a similar set-up except it demonstrates a better replication of the tide.

MS-B-17

Developing a model for river stage during historical drought conditions

Olivia Komoroski, Christopher Hintz, Shawn Rosenquist

Research Mentor: Dr. Christopher Hintz

Flowing 484 km along the Georgia, South Carolina border, the Savannah River passes through 25 counties. The populations of these counties can be greatly affected by the river flooding, especially near or just below the head of tide. Previous research has found that the location of the head of tide changes during flood events and we believe this may be true during drought as well. The purpose of the current study was to determine the average gauge height during normal rainfall and periods of drought. We compared upstream United States Geological Survey (USGS) Savannah River gauge near Clio, Georgia to the drought severity and coverage index (DSCI) for the southeast United States during 2000-2019. These data are well correlated during abnormally dry to exceptional drought, but do not predict river gauge well during normal or flooding precipitation periods. These data will help to inform researchers about typical river behavior during drought to provide insight on tidal interactions and changes in head of tide driven by river flow dynamics.

MS-B-18

Activity of the blackcheek tonguefish *Symphurus plagiusa* in the presence of a blue crab *Callinectes sapidus*

Bryanna Sanders

Research Mentor: Dr. Carla Curran

The blackcheek tonguefish *Symphurus plagiusa* and the blue crab *Callinectes sapidus* are two organisms that are commonly found in estuaries along the eastern coast of the United States. The purpose of this study was to observe the activity of blackcheek tonguefish in the presence of a blue crab. Blackcheek tonguefish and blue crabs were

captured via beam trawling in the mouth of Wyll Creek near Savannah, Georgia. Two replicate tanks were used, each blackcheek tonguefish placed in tank, and were allowed to acclimate to the tank for 10 min. A blue crab was placed in the tank, and the behaviors of the blackcheek tonguefish were observed over a 10 min period. In the control treatment tank, the behavior observed most often was motionlessness that occurred $85.5\% \pm 0.17$ of the time, and the most prevalent behavior in the sediment treatment tank was also motionlessness that occurred $53.8\% \pm 0.42$ of the time. It was expected that flatfishes would be motionless/inactive in both treatment tanks and that they would possibly swim as an escape from predation, but undulating their fins was an unexpected behavior.

MS-B-19

Seasonality of the Gulf Stream current velocity off Cape Hatteras, NC

Sena Tay, Dr. Amanda Kaltenberg

Research Mentor: Dr. Amanda Kaltenberg

The Gulf Stream has a huge impact on the conditions on the Eastern US as well as in Europe on things such as weather and on the biology of the region. The purpose of this study was to determine if there is a seasonal pattern in the current velocity of the Gulf Stream. Data were collected from two acoustic Doppler current profilers (ADCPs) deployed on a mooring in the Gulf Stream in 2016-2017. Results indicate that there were patterns of seasonality of the Gulf Stream, with changes apparent at different depths that likely influence mesopelagic prey distribution for the region. Future studies include further examination of the current directionality and impacts on ecosystem processes.

Marine Science - Masters

MS-M-1

Use of active acoustics to compare the relative abundance of fauna within a confluence of the Herb River, near Savannah, GA

Tiffany Stoeckig, Dr. Tara Cox , Dr. Amanda M. Kaltenberg

Research Mentor: Dr. Tara Cox

Models of river confluences display a unique flow regime that potentially could influence the spatial distribution of aquatic organisms. The purpose of this study was to examine the relative abundance of fauna within and adjacent to a confluence of currents located in the Herb River near the coast of Georgia. A zigzag survey was conducted using a Simrad EK 15 200 kHz echosounder mounted to the stern of 10.68 m skiff to obtain the mean Nautical Area Scattering Coefficient (NASC), which was used as a proxy for faunal abundance. Acoustic data were obtained during flood tides on May 16, 2018, June 13, 2018, and June 28, 2018 and were gridded for the entire water column every 6 s. Grid points were mapped in ArcGIS 10.4 to determine spatial patterns for the mean NASC. A higher mean NASC was found within the center of the confluence of currents than within the adjacent channels. The spatial distribution of the fauna within the estuary system are likely influenced by the unique flow regimes of confluences, since the center of the confluence had the most transect points containing high abundance. Measuring flow rates and discharge as well as trawling to determine specific species identified via acoustics would further support these results.

MS-M-2

Visualizing Seasonal Variation in the Gulf Stream Current

Simeon Abidari, Dr. Amanda M. Kaltenberg,

Research Mentor: Dr. Amanda Kaltenberg

The strengthening and weakening of the Gulf Stream current over time influences both the physical and biological aspects of waters off the

North American eastern seaboard. The Duke University WIZARD (Wideband Integrated Autonomous mooring for Deep water) mooring, with coordinates of 35¼ 20N and 74¼ 51W, measured water temperature, salinity, and density in 2016 and 2017. When the Gulf Stream western front passed the mooring, higher water temperatures were recorded. The purpose of this project was to analyze previous geographic data to illustrate the Gulf Stream seasonal variability and spatial relationship with the moorings location. The NOAA AVHRR (Advanced Very High Resolution Radiometer) Pathfinder version 5.0 global 4km sea surface temperature (SST) day-night monthly average dataset was used to produce maps of the Gulf Stream in ArcGIS 10.4. Distance (km) was measured between the mooring and the Gulf Stream western front for maps of monthly average SST for January, April, July, and October 2009. Distance values were positive when the Gulf Stream western front was east of the mooring and negative when it was west of the mooring. Positive distances were expected for Janu.

MS-M-3

Environmental Vulnerabilities of the Gullah Geechee Communities in Georgia

Jennifer Colley, Dr. Tara Cox, Dr. Dionne Hoskins Brown

Research Mentor: Dr. Tara Cox

The frequency and intensity of storms and natural disasters continue to increase because of climate change. The Gullah Geechee, descendants of enslaved Central and West Africans, are particularly vulnerable as they reside on the coast. The purpose of this study was to identify vulnerable communities with different levels of storms and sea level rise. The Gullah Geechee Cultural Heritage Corridor Commission provided locations of many Gullah Geechee historically-significant sites. These data were mapped in ArcGIS 10.4 and plotted with a Sea, Lake, and Overland Surges from Hurricanes (SLOSH) overlay to show sites susceptible to inundation for different levels of storm events. These site locations were also overlaid with a predicted sea level rise model from NOAA Office for Coastal

Management. The major finding of the study was that 2 active sites were predicted to be inundated with a category 2 hurricane, 3 with a category 3, and 4 with a category 4 in Chatham County, Georgia. A total of 5 active sites were predicted to be inundated with just 1 foot of sea level rise in Georgia. These data could be valuable in the implementation of an appropriate emergency response system for the vulnerable communities and aid in the preservation of valuable historic sites.

MS-M-4

Environmental Vulnerabilities of the Gullah Geechee Communities in Georgia

Jennifer Colley, Dr. Tara Cox,

Research Mentor: Dr. Tara Cox

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MS-M-5

A comparison between spiny lobster *Panulirus argus* stocks and PaV1 prevalence in Florida.

Amara Davis, Dr. Sue Ebanks

Research Mentor: Dr. Sue Ebanks

Spiny lobster *Panulirus argus* is the most economically valuable fishery in Florida and the Caribbean and is heavily exploited. Spiny lobster stocks are decreased by the fishery, and these stocks are heavily reliant on mature legal individuals. The discovery of *Panulirus argus* virus 1 (PaV1) coincided with declines in commercial lobster landings. PaV1 is pathogenic to juveniles, with mortality occurring within 30-80 d of contraction. The purpose of this study is to determine whether there is a relationship between spiny lobster stock decline and increasing prevalence of PaV1. Spiny lobster landing data will be procured from the Florida Fish and Wildlife Conservation Commission. PaV1 prevalence data will be collected from the University of Florida and Mote Marine Laboratory. These data will be mapped in ArcGIS 10.4 and overlaid for comparison. PaV1 prevents part of the juvenile population from recruitment into the fishery, so higher PaV1 prevalence is expected to coincide with smaller landing years. These results will assist spiny lobster fishery stakeholders to craft better policy for a successful fishery without depleting the spiny lobster population.

MS-M-6

Distribution of Estuarine Fishes in the Half Moon and Wilmington Rivers

KRISTAFER HOWARD, Dr. Dionne Hoskins-Brown,

Research Mentor: Dr. Hoskins-Brown

An estuary is the location where the mouth of a freshwater river comes in contact with the ocean. Many marine species use this area as a nursery habitat. The purpose of this study was to determine species composition and abundance based on varying geographic location. Beam trawl tows were done in the Half Moon and

Wilmington rivers at four total sites (3 in Wilmington River and 1 in Half Moon River) on July 8, 2005. Fishes were then identified down to species and released back into the water. Community composition was mapped in ArcGis 10.6 to determine spatial patterns. With some fishes being more tolerant to changes in salinity than others it was expected that the composition of fishes will vary at different locations. In this study species composition was higher at sites further up the estuary than closer to the mouth. Knowing how species are distributed will aid in the understanding of the community ecology of these two rivers in the estuary.

MS-M-7

Anthropogenic Disparity in Tree-Growth Trends

Kristopher Maedke-Russell, Dr. Carol Pride,

Research Mentor: Dr. Carol Pride

Land use changes can substantially impact ecological and hydrological dynamics within salt marsh habitats. Rocket Pond is an ephemeral freshwater impoundment on Ossabaw Island that was created when the cross-island Willows Road causeway was installed, thereby isolating the site from tidal flux. Sediment core analysis at the site suggests that the road was installed over 200 years ago. Additionally, analysis of images obtained from the LandSat program indicate that Rocket Pond has been ephemeral for at least the last 30 years. The purpose of this study was to determine if hydrological alteration at the Rocket Pond site has affected the growth of loblolly pine (*Pinus taeda*) in the adjacent upland slash. Tree-ring width data collected from both sides of Willows Road were standardized using exponential regression to reveal climate-determined growth trends and data from the last 70 years was analyzed using XLSTAT. Mean annual growth had a wider range among pond-adjacent than marsh-adjacent individuals. Additionally, growth was more variable among pond-adjacent individuals than marsh-adjacent individuals. While the growth trends of pond-adjacent and marsh-adjacent groups were significantly correlated with mean annual Palmer Z-index ($p=0.012$ and 0.014 , respectively), only

the pond adjacent group was significantly correlated with mean annual precipitation ($p=0.018$). This suggests that the impediment of tidal flooding by Willows Road has affected the growth trends of landward loblolly pine.

MS-M-8

Habitat use of Allied and Unallied Male Bottlenose Dolphins *Tursiops truncatus* near Savannah, Georgia

Brigid Tye, Robin M. Perrtree, Tara Cox

Research Mentor: Dr. Tara Cox

Many social species, such as the common bottlenose dolphin *Tursiops truncatus*, live in fission-fusion societies where group composition is constantly changing. However, there are occurrences of male-male pairs in some populations of dolphins. Strong, long-lasting bonds between males are known as 1st-order alliances. The purpose of this study was to confirm presence of 1st-order alliances between male common bottlenose dolphins near Savannah, and to determine if creek width is a factor in alliance formation. Data were collected on photo-identification surveys from 2009-2014 from the Savannah River to northern Ossabaw Sound. The half-weight index (HWI) was used to measure associations between individuals. First-order alliances were defined as a HWI of 0.8 or higher. Males were identified via genetics, and individuals with the lowest maximum associations (< 0.5) were categorized as unallied males. Four 1st-order alliances were found among 210 non-calf common bottlenose dolphins with 10 or more sightings. Then, locations of sightings of allied ($n=8$) and unallied ($n=8$) males were mapped in ArcMap 10.4. Creek width was determined for each sighting with a laser range finder or with the National Hydrography Dataset in ArcMap. Sightings of unallied males were in significantly smaller creek widths (519.1 ± 699.0 m) than those of allied males (1006.1 ± 1217.0 m; $p=0.006$). Allied males can provide protection and defense from predators or other males in areas with larger creek widths. The difference in creek width for sightings of allied and unallied males may indicate that habitat complexity

contributes to formation of 1st-order alliances within a population.

MS-M-9

A Comparison of Flatfish Abundance and Composition Across Four Georgia Sites

Jennie J. Wiggins, Jennifer Gut, Mary Carla Curran

Research Mentor: Dr. Mary Carla Curran, Dr. Tara Cox

Determining species abundance and composition patterns is important for understanding how fish community dynamics change based on location. The purpose of this study was to compare flatfish abundance and composition across 3 sites on the Georgia coastline (Cockspur Bay, Tybee Jetty, and Tybee 3rd Street) and 1 site farther inland (Wylly Creek), a tributary of the Herb River. Sampling was conducted monthly from 2013 to 2015 using a 1 mm wide beam trawl with 3 mm mesh. Data were mapped using ArcMap 10.4. Flatfish abundance was expected to be highest at Wylly Creek and lowest at Tybee 3rd Street, as Wylly Creek is shallow and less impacted by open ocean processes. Furthermore, flatfish composition was expected to be higher among the 3 coastal sites than Wylly Creek. Results from this work provide a metric for the distribution of coastal fishes before any potential impact from dredging the Savannah River.

MS-M-10

Proximity study on oyster reefs and marinas in Savannah, Georgia

Shaneese Mackey, Dr. Dionne Hoskins-Brown,

Research Mentor: Dr. Dionne Hoskins-Brown

The increased awareness of the ecological services and economical value of the eastern oyster *Crassostrea virginica* has led to oyster restoration programs in response to the decline in oyster population on the east coast of America. Oyster reefs that are located near boating docks experience more wave action caused by daily traffic of commercial ships and boats that may

decrease oyster density. The purpose of the present study was to calculate the proximity of natural and restored oyster reefs to marinas and boating docks in Savannah, Georgia. Marinas and natural and restored oyster reefs will be mapped in ArcGIS 10.4. Marinas will then be buffered to determine the nearest oyster reef. Restored oyster reefs will likely be closest to marinas and boat ramps than natural oyster reefs. Oyster reefs that are closer to marinas and boat ramps may have a smaller spatial extent than oyster reefs that are located farther away from marinas and boat ramps. The findings of this project would help project managers further their understanding of how other factors influence oyster growth and oyster habitat when locating areas of interest to restore.

Marine Sciences - Faculty

MSF-1

Analysis of front detection methods to identify Gulf Stream front crossings from in-situ acoustic mooring methods

Dr. Amanda M. Kaltenberg

The dynamic Gulf Stream current dominates the physical oceanography of the South and Mid Atlantic Bight regions of the US East Coast shelf and slope regions. The objective of this project was to develop and compare multiple methods of front detection algorithms for determining hydrographic fronts of the Gulf Stream as it passes over a stationary shelf point. A bio-physical mooring equipped with temperature, conductivity, depth sensors and current velocity profilers was deployed in the Gulf Stream from 2016-2017. Multiple front detection algorithms were developed using temporal changes in hydrographic properties and current velocities, as well as surface temperature derived from AVHRR satellite. These fronts indicated when the edge of the Gulf Stream current passed over the mooring location and times likely to have an impact on the abundance and distribution of mesopelagic scattering layers, which were also measured with a Simrad WBAT echosounder. Results show numerous front crossings were recorded over the year-long deployment impacting the mesopelagic prey community.

College of Business Administration

Masters in Business Administration

MBA-1

The Effects Of Organizational Culture And Dynamics On Women In Leadership Roles Within The United States

Tess Bragg, Inessa Korovyakovskaya,

Research Mentor: Dr. Inessa Korovyakovskaya

PURPOSE: - This paper examines the effects of organizational culture and dynamics on women in positions of leadership. Demographics and growth trends for women in leadership roles are considered. Interpersonal dynamics between women leaders and their subordinates, colleagues, and superiors are analyzed. The effects of stereotypes and perceptions on women leaders, expectations for women compared to men in these positions, and wage discrepancies between women and their male counterparts are explored. Barriers to career success for women in leadership positions such as biases in hiring decisions and advancement opportunities as well as the impacts of maternity and motherhood on career advancement are examined. **DESIGN METHODS:** - Structural Equation Modeling and analysis of archival data

RESULTS/EXPECTED RESULTS: Hypothesis related to the effects on women in leadership roles were tested through the archival data analysis. We have found that organizational culture, workplace dynamics, and other mitigating factors have a strong effect on women in leadership roles.

DISCUSSION/CONCLUSION: - Our findings contribute to the existing body of knowledge by investigation of the factors that affect women in positions of leadership and hinder their career success. This research contributes to organizational practices on design of effective instruments that help women leaders effectively progress through ranks and succeed to the benefit of their organizations.

MBA-2

Politics And Power: Research And Modern-Day Applications

Brianna Feaster, Dr. Inessa Korovyakovskaya

Research Mentor: Dr. Inessa Korovyakovskaya

PURPOSE-The purpose of this study is to determine the implications of power and leadership concerning Trump and his administration rise to power. Trump has proven that power and politics rule over democracy or the desires of the people. **DESIGN METHODS-** Different theoretical approaches coupled with current events and supporting evidence from others will aim to address power, politics, and democracy. Data and research from peer-reviewed journals, news updates, transcripts from press conferences will formulate the bases. **RESULTS/ EXPECTED RESULTS-**The data and research collected will prove that power combined with influential political rookies like Donald Trump contributes to the deterioration of common social conditions.

DISCUSSION/ CONCLUSION- Understanding the purpose of power and how it is us to gain support and to lead large bodies of people will contribute to the modern day understanding of power, politics, and democracy. In organization behavior, power referred to as a capacity to influence the behavior of others. Individuals can possess power not to use. An individual has power when they possess something that one wishes to attain or desire. Power is a device used to manipulate and corrupt individuals if misused. Leadership requires congruence of goals of the leader and the followers. Ultimately, power and leadership are crucial in connection to politics. If one has power, to some degree, they must be a leader. Consequently, this is not true, not to offend the current president but the current administration makes rash decisions and abuses their power often to protect the interests and well-being of their counterparts.

MBA-3

Leadership Styles And Their Impact On Organizational Outcomes

Shailja Mathur, Inessa Korovyakovskaya

Research Mentor: Dr. Inessa Korovyakovskaya

The purpose of this research is to examine how the choice of a leadership style in an organizational setting influences the leaders ability to effectively supervise his/her employees. This paper reviews literature on leadership styles and their effects on different facets of work-life quality. The analysis suggests that leadership has a significant, positive or negative, and direct effect on work satisfaction. Leadership affects organizational commitment and work performance indirectly through work satisfaction. Transactional, transformational, charismatic, paternalistic, autocratic, ethical, democratic, and other leadership styles have emerged in the modern work settings. The design method used for this research is Structural equation modeling (SEM). To examine the relationships among the leadership styles, organizational performance and work satisfaction as moderated by the organizational culture and organizational commitment. The findings of this paper contribute to the extant literature and organizational practices that seek better understanding of the relationships among leadership styles, organizational performance, work satisfaction, organizational culture, and organizational commitment.

MBA-4

Virtual Team - Collaboration, Technology, Decision Making And Effectiveness

Sasikala Babu, Inessa Korovyakovskaya

Research Mentor: Dr. Inessa Korovyakovskaya

Purpose: Globalization has brought the world closer, made interactions easier and decisions faster. The exponential growth in technology has helped us expand our horizons in the way we function as a team in the organizations. In this

paper, the focus is to understand how the Virtual Team (VT's) collaborate, the type of technology or tools used in the collaboration process and the effectiveness of these technology in productivity and decision-making process. Research Questions: What are some of the technology/ tools used in VT to collaborate? Are the tools customized per the needs of the individual VT, or they are generic to all VTs? What are the benefits and drawbacks of technology in collaboration techniques? Are the existing collaboration theories on VTs still relevant? What is the role of technology in decision making? Does the technology used determine the effectiveness of the VT? Independent variables are technology and collaboration methods while the dependent variable are organizational decisions, productivity and effectiveness. Design methods: Conceptual research. Findings/expected results: VTs use many collaborative tools and processes to operate. Studies on VTs in major multinational organization have found that performance depends on how employees use these technologies, not on the technologies themselves. The VT with more structured collaboration process has higher chances of making efficient decisions. We expect to confirm that when VTs match the technology to the task, set specific individual task, communicate the status regularly, provide support, open and inclusive, they have higher chances of producing quality deliverables and completing tasks on time.

MBA-5

Strategies Influencing Shopping Behaviors

Giovanni Lugo, Dr. Inessa Korovyakovskaya,,

Research Mentor: Dr. Inessa Korovyakovskaya

This study investigates several research perspectives on evaluation of supermarkets that strategically place items to influence shopping behaviors and stimulate impulse buying. The six stages of the consumer buying process and its relationship to buying behaviors will be evaluated: Problem Recognition, Information Search, Evaluation Alternatives, Purchase Decision, Purchase, and Post-Purchase. Research questions: What effects marketing strategies such

as store environment and promotional products have on consumer buying behaviors? Will consumers budget be affected by impulse buying? What type of strategies are effective in luring shoppers and creating impulse buying? Strategic methods to control and influence buying behaviors - supermarket psychology, simulating the senses, exterior exit locations, slow music to pace shoppers, aisle runners slowing down shoppers, promotional products, strategic placement of items along checkout lanes and location of goods on shelves - will be evaluated. Independent variables: Strategic promotional approaches, the influence of children, and store environment. The dependent variable: Consumer impulse buying behavior.

Design/methodology/approach: This study presents a systemic review of an extended Consumer Decision Making Theories analytical framework of each step in the shopping process, strategies used and interaction among the strategies. A face-to-face frequency distribution with sampling target population will be used. Data will be analyzed with ANOVA and regression analysis. Data collection: Observations will be conducted at several supermarket locations. Findings/Theory driven Research findings will provide insight into shopping experiences, processes and application of the steps of Consumer Decision Making Theories analytical framework will help validate the difference between the theory and practices.

Interdisciplinary Certificate Programs

Data Analytics Certificate

DAC-1

Role of Supply Chain Flexibility and Reliability on Online Shoppers Behavior and Trust

Raymond Elliot, Suman Niranjana, David Simmonds

Research Mentor: Dr. Suman Niranjana

Because of Online shopping, consumers have a viable alternative to brick & mortar stores, for acquiring high value products at the best prices. However, the value of online shopping is limited to the consumers trust which is influenced by supply chain/transportation flexibility and reliability. We propose to conduct a cross-country study, between online customers living in United States and India. We propose that the individual personality, country culture, customer service, and online consumer behavior influences online shopper attitudes, trust, and reviews. Further we believe these relationships are moderated by supply chain/transportation flexibility and reliability, payment method, socio-economic status and return policy. Additionally, we believe that these factors will have differences at the country level. Using panel data from Qualtrics gathered from consumers who shop online, primarily Amazon, and the top 5 online electronics retail firms in United States and India, customers in both countries, we examine aforementioned factors. We consider only consider customers who have purchase electronic items that cost in excess of \$200. This research does not focus on other types of items. Using Structural Equation Modelling and ANOVA we test the hypothesized model. A sample data of 500 consumers from India and United States are collected for analysis.

DAC-2

A Markov-chain probability distribution mixture approach to hourly forecasting of clear-sky index

Leo Degon, Suman Niranjana, Abhinandan Chowdhury

Research Mentor: Dr. Suman Niranjana, Dr. Abhinandan Chowdhury

In this paper, hourly clear-sky index (CSI) is modeled by a Markov-chain probability distribution mixture. The method uses measured data from the National Solar Radiation Database to construct a Markov chain with states corresponding to broad states of atmospheric interference, with variation within the state modeled by a probability distribution. Parameters

used in the model are determined by examining the measured Global Horizontal Irradiance (GHI) between the summers of 1995-2002 in Tallahassee, FL and calculating the mean and expected time spent in a state. A transition matrix was constructed by considering the steady state. MATLAB autofit functions were used to construct the probability distributions associated with each state. The 2-state and 3-state models are compared for goodness of fit and autocorrelation. Both 2-state and 3-state models produce high goodness of fit and positive autocorrelation, with the 3-state model producing a more accurate model.

DAC-3

The Gulf Stream's effect on the variance of temperature at Cape Hatteras shelf

Moriah Byrd, Dr. Amanda Kaltenberg, Dr. Abhinandan Chowdhury

Research Mentor: Dr. Amanda Kaltenberg, Dr. Abhinandan Chowdhury

Cape Hatteras is a unique region off North Carolina. Converging on this area are several different patterns of water from the Gulf Stream, Mid Atlantic Bight, and South Atlantic Bight. This project aims to study how the temperature in the water column of the Gulf Stream varies over time and its potential to affect the distribution biology throughout the food chain. Two conductivity, temperature, and depth instruments were placed midwater on a mooring at 566m and 643m off the continental slope. Many different variables, including temperature, salinity, and sound velocity, from March to December of 2016, were analyzed using cross correlation. Results suggest that the variance in temperature changes over a daily to weekly basis likely due to the passage of fronts and mesoscale eddies. The conclusions from this project will be used to help understand the link between the physical and biological aspects of this dynamic region.

Transportation Certificate

TCP-1

Reinforcement Learning and SONAR Imaging for Underwater Bridge Inspection

Sansriti Ranjan

Research Mentor: Dr. Bryan Knakiewicz

Bridges have a significant impact on the economy of a country as they play an important role in serving the transportation needs of a country. It is therefore of immense importance that bridges are not only designed and constructed well but also maintained and repaired when required. There are numerous challenges the Federal Highway Administration (FHWA) and state departments of transportation (DOTs) have to face while inspecting bridges - human risks involved in inspecting bridges as workers have to be deemed fit to carry out their tasks, workers also have to be trained in scuba diving to inspect the sub-structures of bridges underwater, large amounts of investment for underwater inspection of sub-structures and low visibility underwater. The main objective of this research is to apply artificial intelligence (AI) and Machine Learning - mainly Reinforcement Learning (RL) to help overcome the challenges in bridge inspection and add a new dimension to bridge inspection underwater. Traditionally, it is required for human workforce to dive and monitor the sub-structures using different video systems or Remotely Operated Vehicles (ROVs). Recently, sonar imaging has been incorporated to help assist in getting clearer images and perspectives of underwater screening. In this study, different RL techniques such as Markov Decision Processes (MDPs), Temporal Difference Learning and Dynamic Programming are researched to create an RL agent which will be linked to the sonar imaging devices to assist in underwater inspection. This RL agent will analyze the data collected by the sonar imaging device (through sonar waves) and find any damage to the bridges structurally or any fault and cracks due to corrosion, currents or weather. This RL agent will then alert the concerned authorities or centers and due courses of action

can be chartered. This project will innovate underwater bridge inspection with just four processes: setting up baseline indicators for inspection, collecting and monitoring data (through the RL agent and sonar device), acting on alerts and finally handing over the responsibility to the appropriate state or federal agencies. Additional outcomes of this study include the possible reduction of personnel and costs of underwater bridge inspection, and introducing a tech-savvy method to make safe bridges safer for public transit.

TCP-2

Impact of Integrated Collection Strategies of End-of-Life Products on Supply Chain Performance and Social Responsibility

Najaah Mahdi

Research Mentor: Dr. Suman Niranjana

The overall purpose of this study is to investigate the relationship between integrated collection strategy used for End-of-Life products and perceived carbon foot print on supply chain performance and corporate social responsibility. The End-of-Life products have to be discarded if they cannot be reused or recycled, this increases the increased amount of carbon foot print, and this is a major issue for manufacturers, communities and countries. The current research will investigate: (1) if there has been a growth in the number of End-of-Life products that have design for remanufacturing, (2) what are some of the pilot projects and collection strategies that can be used to manage End-of-Life products, (3) and how manufacturers have been treating Waste Electrical and Electronics equipment (WEEEs). The research focuses to identify the theory to support the claims mentioned earlier.

TCP-3

Role of Disruptive Information Technology in e-commerce on Supply Chain Performance

Douglas Kirkland

Research Mentor: Dr. Suman Niranjana

The purpose of this paper is to analyze the substantial role e-commerce plays in the supply chain industry. The research investigates the role of disruptive information technology, lean supply chain efficiency, flexibility, and effectiveness on firm performance. Specifically, the research considers e-commerce giants such as Amazon.com and WalMart.com and the effect it has played in companies growth. The paper will also include extensive literature review. We discuss measurements, models, and hypotheses that exemplifies why e-commerce is the main source of gentrification for the lean supply chains and their industries.

College of Liberal Arts and Social Sciences

Fine Arts, Humanities, and Wellness

FAHW-1

The Laugh Track of Human's History

Darryl Thompson-Norton

Research Mentor: NA

PROBLEM/ISSUE TO BE CONSIDERED
Comedy has not changed in 2519 years.
UNDERLYING ISSUE KEY FACTORS: Comic situations and characters are examined from Ancient Greek and Roman theatre through today's contemporary theatre, film, and television.

FAHW-2

"Its Come To My Attention"

Mr. Nicholas Silberg

Research Mentor: N/A

This body of work represents my family and our relationships. Throughout my life, I have experienced (within my family) trauma, mental illness, alcohol abuse, and abandonment. My intent was to explore these events by recreating what I experienced on canvas will resonate with others who share similar experiences. These portraits create opportunities for open dialogue for people to unite around, seek answers and provide solutions to social problems that plague so many people within families, communities and the country.

My process involves collecting old family photographs for reference. I then research the symbolism that is associated with the mental illnesses and diseases surrounding my family experiences. I later incorporate this symbolic imagery into my paintings based on those family photos and my memories.

FAHW-3

Using Reflective Judgment to Enhance Civic Discourse

Lisa Yount, Murray Skees

Research Mentor: N/A

This poster will focus on the essential learning outcome of civic knowledge and engagement and how this outcome connects to a student's epistemic self-awareness. The work of Kitchner and King on the Reflective Judgement Model yields promising potential for developing the learner's ability to encounter difference. People who are practiced in the skill of reflecting on their own epistemic assumptions are better equipped to accept public roles involving significant responsibility. These individuals are not only willing but also prepared to engage in civic discourse centering around complex social and political issues in which reasonable people may reasonably disagree yet there is the possibility of arriving at better and worse conclusions when a range of sources of information from a variety of disciplines and perspectives have been respectfully and thoughtfully considered.

Behavior Analysis

BA-1

Do we have to teach everything? Using equivalence-based instructions to teach more in less time

Kimberly Frame, Breonna McRae, Takeira Jacobs

Research Mentor: Kimberly Frame

Many teachers struggle to find the time to teach everything a student needs to know in a course. There is research to show that if material is presented in a particular way the teacher doesn't have to teach everything, and instead the learner can demonstrate free learning. The current research sought to extend the research on stimulus equivalence, specifically by embedding

a stimulus equivalence procedure into an introductory course in behavior analysis. Students were given material and teacher paced assignments but practiced the material on their own. The majority of the students demonstrated some equivalence relations. Slightly over half demonstrated all equivalence relations. Future implications for course embedded stimulus equivalence are discussed.

Journalism and Mass Communications

JMC-1

Using System Network Theory to explore Online Learning Communities: Implications for Low-Performing Students Taking Online Classes

Juliana Maria Trammel

Research Mentor: N/A

Online communication offers the potential for collaboration as well as increased participation in the learning process, reflection, peer tutoring, monitoring of student learning as it is taking place, and extension of the classroom learning, (MacKnight, 2000, pg. 39). In order to effectively integrate online courses and programs within HBCUs, culturally diverse practices that reflect the traditional ethos of the campus must be taken into consideration (Hairston, Crawford and Johnson, 2018). It has been well documented that HBCU campuses offer a supportive environment and a sense of community not only to African American students but other minority groups (Covington & Hilton, 2016). Additionally, studies have showed that involving other students in the education process (student-to-student learning) has resulted in an increased understanding of the subject matter (Ginty & Harding, 2014). A survey conducted with students attending a Southeast HBCU in Georgia showed that 64% of the students agreed that other students provided them with great support during their matriculation. The purpose of this study is to analyze the implications of online discussions in engaging low-performing students. Using NodeXL as a method of data collection and analysis, discussions of an online class at a

HBCU in the Southeast region will be studied. Two major research questions will guide this investigation: RQ1: How are social systems created in online discussions? RQ2: In what do discussions contribute to learning?

Political Science & Public Affairs-Faculty

PS-1

Why it is it so hard to make public universities work more efficiently? How can we make it work?

Dr. Behrooz Kalantari,

Research Mentor: Dr. Behrooz Kalantari

The focus point for this study is bringing about changes in public universities to make them work more efficiently. First part of the study deals with the concept of efficiency and asks why some institutions of higher education end up having financial difficulty. The second part of the study tries to deal with the question of organizational change and identify some of the major necessary components that are likely to make it successful. The main analysis, however, will be on the main reasons that prevent the change agents to be successful in respect to public institutions as compared to the private sector. The third part of the work concentrates on overcoming the obstacles that work against the efforts in bringing about changes in public universities. Finally, this study tries to identify major factors that should be present in the change process in order to make it work in public universities.

Social Work – Masters

SW-1

MSWII, Evidence Informed

Mobility Concerns and Life Contentment

Bria Anderson

Research Mentor: Dr. Shinaz G. Jindani

When we face challenges in life and become dependent on other for help on a daily basis, life content tends take a dip and downward turn. Single subject client for this study was a veteran with a diagnosis of PTSD reported concerns with dependency as he was getting older and was wheel chair bound. The desire-fulfillment theory states getting a good life has to do with one's attitudes towards what one gets in life rather than the nature of those things themselves. Given the client's age, it was very likely that he will grow physically dependent and would continue to need help. Therefore, Cognitive Behavior Therapy and group work was implemented so that his thought could be restructured to appreciate what he gets from life. Life Contentment Scale with 16 items was used to obtain 15 data points. The data was tested for autocorrelation for the baseline and the intervention. The baseline was $p .353$ and the intervention was $p .893$. There was a trend that was detected and the data was normally distributed. There was Proportion Frequency applied which was noted which shows the difference between the phases ($p=0.00$) Delta noted 42.1% increase in desired direction. Through this project I learnt that life contentment has personal relevance and meaning. For me the profession of social work adds that meaning to my life. Through measurement, I gain better understanding of client outcomes, which in turn reinforce my very own sense of practice effectiveness which deeply connects with my own sense of life satisfaction. The word contentment is defined as the state of being happy and life contentment is being satisfied with your life and what is happening around it. Life throws curveballs at you all the time. At times your happiness can be altered but when you sit back and examine where you have been and where you're headed can you say that you are content in who you are and the things that you have

accomplished so far? In this single subject design, there will be examination of life contentment using a questionnaire on a four-point scale. The client is at an agency that offer different modes of health care in one place. Client comes in twice a week and will be given the questionnaire one to do during session and one to take home. There will be individual and group therapy to examine life contentment. The session will provide ways to increase positive attributes and focus on continuing to move forward in life and make positive moves towards improving life contentment.

SW-2

MSWII, Autoethonography

My Trajectory: Becoming a Social Worker

Bria Anderson

Research Mentor: Dr. Shinaz G. Jindani

As I entered college, social work was not my first choice. During the freshman year personality quiz peaked my interest in social work. As I reflected upon my childhood experiences social work profession gained personal meaning and relevance. Growing up with a lack of resources, I did not establish significant relations with my friends. Social Work purports human relationship as a basic source of survival. This appealed to me as John Bowlby like Freud believed that mental health and behavioral problems could be attributed to early childhood. The attachment relationship in childhood expresses itself in all future social relationships so disrupting it can have severe consequences. Therefore, I would like to work with children help form bonds with their loved ones such that it will preserve the integrity of the adult relationships. To my bias, health adult relationships between couples is a pre-requisite to establishing bonded relationship with children. As all our relationships are connected and gain motivation from each other, it is imperative that we consider context of our social work practice and the context in which the client is surviving. Thus creating an enabling context with sufficient resources can foster healthy relationships and productive adult lives. John Bowlby (1907 - 1990) was a psychoanalyst (like Freud) and believed that mental health and

behavioral problems could be attributed to early childhood.

SW-3

MSWI, Policy and Practice

The Education for All Handicapped Children Act of 1975

Annette Barnes

Research Mentor: Professor Evelyn Dennard

During the 60's and 70s there was much optimism for special education. During this period, of the civil rights movement and Vietnam War, even though there was much turmoil, the interest in mental retardation heightened during the presidencies of John F. Kennedy and the War on Poverty under President Lyndon Johnson (Keogh, 2007). The increased awareness of the importance of early intervention for children's development brought about discussion and change in educational practices in the country. According to Keogh (2007), research on early intervention had a major effect on national and local efforts to provide quality programs such as Head Start for economically disadvantaged children as well as the education of handicapped children. According to Keogh (2007), the Education of All Handicapped Children Act of 1975 (EAHCA), provided for parental involvement in the educational placement decisions. It required that states provide a "free appropriate public" education to all handicapped children between the ages of three and eighteen by September 1, 1978 and to all handicapped children between the ages of three and twenty-one by September 1, 1980. Included within the definition of handicapped children were the mentally retarded, learning disabled, physically handicapped, and emotionally disturbed. Prior to this act, there were no provisions for education for handicapped children. However, the act was not passed without some flaws. According to Brown (1979), the act did not specify guidelines for appeals, for complaint from parents. Another concern regarding this act was that services were not specifically prescribed for children who were to receive services. The (EAHCA) did not provide any specific guidelines for teacher

referral practices, and data showed that there was a disproportionally placement of black children, in special education, due to biased evaluations, according to Clune (1985).

SW-4

MSW I, Generalist

Understanding Accommodations Effectiveness

Laura Boelkens

Research Mentor: Dr. Shinaz G. Jindani

Under the Americans with Disabilities Act, most college are required to provide accommodations to students with disabilities to promote equitable educational opportunities (Americans with Disabilities Act of 1990). Some accommodation services are oriented towards the medical model of disability and provide a set of accommodations based solely on an individual's diagnosis. On the other hand, some accommodation services are oriented towards the social model of disability and customize accommodations based on student's unique support needs. The rationale behind the social model is that each student will be impacted by the academic environment differently and therefore should not be given a one-size-fits-all accommodations plan. The purpose of this study is to examine whether a higher rate of accommodations effectiveness is associated with the social model of providing accommodations. This study explores the effectiveness of accommodations from the viewpoint of students at a four year arts school who have received accommodations. A Google Form will be sent to the recipients of this service via an email request. Consenting participants will answer a 21-items questionnaire inquiring about their professor's reception towards their accommodations, the usefulness of their accommodations, and the helpfulness of their accommodations specialist based on a five-point scale. This research hopes to compare participants who have received accommodations under the medical model and those who have received accommodations under the social model. Social Work implications will be discussed.

SW-5
MSWK 1, Policy and Practice

Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) OF 1996

Laura Boelkens

Research Mentor: Professor Evelyn Dennard

This brief explores the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) 1996 colloquially known as the welfare to work act signed by President Bill Clinton as an attempt to eliminate the need for social welfare in America. The brief will include a description of the PRWORA including a look at all the areas of service which it covers. Additionally, the history of the welfare state in America and the policies and programs which impacted its creation will be addressed. The description will include a look at changes the PRWORA initiated such as the elimination of the Aid to Families with Dependent Children (AFDC) program and its replacement with the Temporary Assistance for Needy Families (TANF) block grant. Additionally, the intended implications of the policy on welfare services will be discussed with an emphasis on its impact on child welfare. Moreover, the brief will include an analysis of the overall functionality of the policy while taking into account previous and current debates surrounding the policy and its implementation. An intersectional and holistic approach will be utilized when analyzing functionality by looking at census data and independent studies to support claims. This brief will approach the policy from a social worker's perspective looking at its short- and long-term social impacts such as but not limited to the stigma associated with single mothers, disparities in access to support services, and the impact on public attitude concerning welfare recipients.

SW-6
MSW II, Evidence Informed

No Alternative to Feeling Secure: A Story of a Homeless Child

Jallona Brady-Dennis

Research Mentor: Dr. Shinaz G. Jindani

Making meaning of personal challenges is difficult for any 10-year-old, especially for those who experience homelessness. The single subject client displayed anger and propensity to harm other children. Continuous negative affect can produce pessimistic attitude towards life and can lead to mental health challenges in adulthood. Evidence Based Intervention included relaxation techniques to reinforce the importance of acknowledging and recognizing anger outburst. Consequently, learning to regulate ones affect and be in-charge of one's emotion would foster meaning making process that would be personal and productive fostering healthy coping mechanism. A 13 Item instrument was designed using 1-4 Likert scale that measured anger for 7 weeks. Fourteen completed data were obtained. The data was divided into two phases. The data was tested for autocorrelation. No trend was detected. Proportion frequency was applied ($p=0.36$) that detected no differences between the phases. D-Index noted 21% increase in undesired direction. Through this project I learnt to measure the client outcomes that can in turn be used to inform my practice. The relaxation technique only served as a band-aid approach. For the client to regulate anger, it was important that the client experience feelings of belongingness and feel emotionally secure such that anger outburst will not be accessed as a temporary solution to stress.

SW-7
MSWII, Autoethnography

Human Relationship: The Basic need of Survival

Jallona Brady-Dennis

Research Mentor: Dr. Shinaz G. Jindani

Despite the challenges faced by my single mother, I was never deprived of love and feelings of belongings. There were nights when she did not eat, just so my sister and I could. Yet her love and mere determination to make us successful in our lives, has served as a driving engine for me to not only complete my Master's degree but to become a social worker. I am the first in my family to graduate from college. It was an

outstanding accomplishment for me to graduate with a Bachelor of Social Work degree, and that was only the beginning of my pathway to success. It is not uncommon to witness separations and divorces in our society along with child support issues. There might be a parent who simply cannot support financially, that does not mean that they are free to withdraw emotionally and not share their love with their children. Monies does matter however not engaging with your child emotionally could have life-long consequences. This is what I learnt from my mother, that despite limited financial resources generosity with love does make an individual contributing member of any society. Thus I have developed a passion for children especially those who are raised in single parent homes. Through my social work trajectory, I realize that the money does mean something, but human relationships are not available in the market for a sell. It can only come from free will and compassion that lives in all of us. Therefore, I would practice Client Centered Therapy proposed by Carl Rogers and use empathy and unconditional positive regard to foster healthy coping skills among my clients.

SW-8

MSW II, Evidence Informed

Impact of Narrative Therapy, Cognitive Behavioral Therapy, and Yoga Therapy on a Grief Process

Elizabeth Brodhead

Research Mentor: Dr. Shinaz G. Jindani

Grief following the death of a loved one is a significant and nearly universal human experience. Client contacted the bereavement center in August 2018 seeking grief support after the death of her husband. Client was experiencing disruptions in her mood as well as difficulty focusing and relaxing, all of which are considered normal, yet challenging grief responses. The treatment package (narrative therapy, group yoga therapy, and cognitive behavioral therapy) developed for the client will improve her ability to self-regulate her mood, cognitive focus, and relaxation response. The intervention was measured using the Grief Burst Tracker (developed by the MSW intern). Results

indicated an increase in grief bursts/episodes, which would appear to be undesirable. However, the client's development of mindfulness (through participation in yoga therapy) likely produced an increase in grief bursts/episodes. Thus, these results are mediated by research (Payne et al., 2015) which indicates that increases in mindfulness produce greater coherence between internal affective states and external emotional expression, a positive development in the client's grief journey.

SW-9

MSW II, Autoethnography

Rooted by Non-Judgmental Attitude, growing to Practice Healing Arts

Elizabeth Brodhead

Research Mentor: Dr. Shinaz G. Jindani

Growing up as a child, I witnessed formal religion judging my actions and the actions of my family members. I grappled with the disconnection I saw between compassionate rhetoric and attitudes of rejection. Over time I disengaged with formal religion and launched my own process of meaning making, through which I eventually arrived at the door step of the MSW program. Psychosocial Development Theory (Erikson, 1950) normalized life challenges/crises for me, and gave me a flexible framework for understanding how individuals grow to become unique human beings. This helped me understand that all people fluctuate on a continuum, depending on environmental systems and many other factors, which is also affirmed by the Ecological Perspective Model (Germain, 1991). Furthermore, as I provide individual bereavement counseling to clients through my internship, I also introduce body-oriented therapies, such as yoga (van der Kolk, 2014) and mindfulness (Kabat-Zinn, 1990) to my clients as resources, so that they may resolve the various crises as described by Erikson on the positive side of the continuum. I feel inspired as I recognize that my career trajectory has spiraled around once again to include yoga, as I have been practicing yoga since 1998 and teaching yoga since 2002. I have now come full circle, as I have found an outlet for my desire to serve others with compassionate action,

not just compassionate rhetoric. I understand that I need to keep myself centered and grounded, so that I can facilitate the development of these skills in others and in my larger environment, eventually opening a healing arts center.

SW-10

MSW II, Evidence Informed

Impact of Sexual Abuse on Problematic Sexual Behaviors and Anger Management for Adolescents

Erica Byrd

Research Mentor: Dr. Shinaz Jindani

Child sexual and physical abuse is a major and prevalent worldwide issue and unfortunately it lies within the barriers of the United States. It is unrecognized as a serious problem, not only because it results in long-term trauma reactions, but also because it involves an abuse of power by adults over children in their care (Cavazos, 2012). The agency caters to children and adolescents who have experience severe sexual or physical abuse or witnessed a violent crime. Given these unfortunate occurrences within their lives, developing abnormal or undesired practices is common. This makes the need for intervention a crucial asset for recovery from the trauma. The single subject client displayed problematic sexual behaviors. Using the Evidence Based play and art therapy the client was helped to identify of the triggers, emotional outbursts, and understand the feeling anger. This was measured by 10 item scale that measured trigger and regulation of affect. The data was tested for the autocorrelation, Phase I $p=0.75$, Phase II $p=0.58$. T-Test was applied that noted no significant differences between both phases ($p=0.43$). Delta noted 14% decrease in the desired direction. Statistically speaking, this implies that the difference is not large enough for us to believe that the intervention made a significant difference with the client. I entered in this social work practice situation with some self-doubt. Through this project I was able to integrate theory, practice methods and research measures. The experience was insightful and I learn the value of integrating all three components to strengthen my competence. I acquired new skills that support

evaluation of practice at a micro level. The knowledge gained from this study has made me a more confident practitioner overall.

SW-11

MSW II, Autoethnography

To Know Yourself, Know Your Feelings

Erica Byrd

Research Mentor: Dr. Shinaz Jindani

It Is not unusual for a child to feel responsible for the divorce of their parents. With a limited ability to process my affect, I not only took responsibility of my parent's divorce, but felt alone working hard to make meaning of immature adult behaviors around me. This brought me to seek social work as my career of choice. Armed with various theories, my theory of choice is Strength Perspective that helps me focus on my own strength and the strength of others. My practice is now focused on helping children discover their own potential, be inner centered, recognize one's feelings and live the life to its fullest extent. To practice strength perspective, I infuse my practice with empathy, so that children will experience freedom in my relationship to discover their own selves. I also believe that I can make impact at a community level as well. I would design program that would address community needs and evaluate them to understand the extent of impact it makes on the community's context. In summary my life trajectory led me to social work, it just comes natural to me.

SW-12

MSW II, Evidence Informed

Using Cognitive-Behavioral Therapy (CBT) to Regulate Anxiety and Depression

Vilma Castillo

Research Mentor: Dr. Shinaz G. Jindani

Individuals suffering from General Anxiety Disorder (GAD) may experience restlessness, fatigue, irritability, difficulty concentrating, sleep disturbance, and somatic symptoms. Additionally, those with Major Depressive

Disorder (MDD) may show low energy, insomnia, worthlessness, and recurrent suicidal ideations with or without a plan. The single-subject client for this study is diagnosed with both disorders, and therefore, the techniques of self-monitoring, centering, diversion, and relaxation training were implemented. These techniques operationalize Cognitive Behavioral Therapy (CBT) that is rooted from the Cognitive Behavioral Theory, which explains how people become aware of their negative, unrealistic interpretations and learn to identify the patterns related to their distorted thinking. This study utilized 16-item questionnaire developed from Severity Measure for Generalized Anxiety Disorder and Depression Anxiety Stress Scale (16 data points). During the baseline, Phase I, five data points were gathered. In Phase II (5 data sets), Centering and Deep Breathing were combined, and in Phase III (6 data sets) Diversion techniques were added to the intervention. Proportion Frequency noted changes from Phases I - II in desired direction for Anxiety ($p = 0.00$) and Depression ($p = 0.00$). However, the changes from Phases II -III were noted only for Depression ($p = 0.00$) and not for Anxiety ($p = 0.23$). Delta noted 50% changes in Anxiety during the Phases I -II but noted only 11% changes from Phases II - III. Implying that adding Diversion did not make a significant difference in Anxiety levels, even though it remained within the desired zone. Delta Index noted 43% changes in Depression from Phases I - II and 50% changes from Phases II - III. Adding Diversion did catalyze regulation of the depressive symptoms. Through this project, I learned to measure my own practice and use the data to improve client outcomes. By engaging in a dialogue and using CBT techniques, the client was able to have revealing moment, which was a humbling moment for the both of us.

SW-13

MSWII, Autoethnography

From Personal Biases to Personal Practice Philosophy

Vilma Castillo

Research Mentor: Dr. Shinaz G. Jindani

My personal practice philosophy is rooted into my childhood experiences. Throughout my childhood, I was consistently exposed and was a beneficiary of the social service system. Given my positive experience in social service delivery, I have preconceived notions of a social worker's roles, expectations, and the lifelong impact one can have on a child. Given this experience, I decided to enroll in the MSW program which has enhanced my ability to learn new theories and practice methodology. My experiences gave me the necessary life skills, but the MSW program allowed me to witness and apply the theories in my field placements. I have been able to utilize the Client-Centered Theory, Cognitive Behavior Theory, Psychoanalytical and Psychosocial Theories that have been beneficial in the substance abuse and mental health domains. As I am on my final stages of the MSW degree, I am aware that I will be using the aforementioned theories, specifically the Psychodynamic Theories in my daily practice. I believe that these theories can greatly impact those who suffer from depression and anxiety by helping them explore their full range of emotions, even those they might not be aware of. While I am competent to serve an array of client populations, I would like to work in the mental health domain as there is a major need for social workers. The MSW program has not only provided the essential knowledge and skills to transform lives, but has given me the opportunity to become aware of my personal biases and how it can impact my professional judgment. I am confident that these biases are now going to serve as an asset, giving me a different perspective which will allow me to fill those policy gaps within service delivery.

SW-14

MSW II, Evidence Informed

Homelessness and Workplace Stress

Rachel Cuffy

Research Mentor: Dr. Shinaz G. Jindani

A homeless client with autoimmune disease reported workplace stress and its impact on his/her quality of life. Using Cognitive Behavior Theory, evidence-based Cognitive Behavior Therapy was implemented through the use of

Talk Therapy. The client attended these therapeutic sessions every week. Two data points per week were gathered. After the first two weeks, the client was able to seek housing. Since the change of living environment occurred, it was hypothesized that this would propel the client's movement towards the goal attainment; dependent variable. Workplace stress was measured using 27 items, with a Likert Scale of 1-5, where one signified Never, and five signified Very Often. In all 17 data were collected. The data were tested for autocorrelation (baseline $p=0.990$, intervention $p=0.252$). Proportion frequency noted significant change ($p=.00$) between the phases. D-Index noted 32% change in the desired direction. Housing services made a difference and shifted his/her thinking about perceived stress. I learned how to develop an instrument related to the practice situation and the importance of utilizing an intervention that works for the individual. This, in turn, provided me with an awareness about my practice effectiveness; and contributed to my clinical experience.

SW-15

MSWII, Autoethonography

Rachel Cuffy

Research Mentor: Dr. Shinaz G. Jindani

At age thirteen, I witnessed child neglect of a dear companion who was in foster care. I felt helpless, as I was only thirteen with no skill or knowledge to help my friend. The burst of compassion within me prompted me to express empathy towards my friend, but this did not change her situation. The experiences in my MSW program have been truly a blessing since I have not only obtained knowledge; but, enjoyed the engagement in the process of obtaining the knowledge which has become my very own experience to stay with me lifetime. Jean Piaget labels this as a schema, which is modified through continuous engagement with practice situations, and provided an opportunity to see theories in action. During the current placement, I was exposed to HIV clients. I could not grapple with the magnitude of existing myths about the disease and about the individual who acquire it. Besides serving this population I would like to conduct educational sessions for the general public not

only to create awareness but also to generate political support that would provide effective services for this population. Using Jean Piaget's Formal Operational Stage of Cognitive Development, I would use moral, philosophical, ethical and social components of HIV illness to build upon abstract reasoning so that the participants could use general principles of the problem of HIV and will be able to apply to a specific person, family member or an individual they may encounter in their daily life. My trajectory has now evolved from feeling helpless to becoming an empowered adult. As my career in social work unfolds, I would use compassion within me that I first become aware of when I was thirteen, with the new knowledge gained due to MSW program, I am now an advocate for change at all levels of practice be it local or international.

SW-16,

MSW-II, Evidence Informed

Anxiety Management after the experience of Domestic Violence

Ana De La Cruz

Research Mentor: Dr. Shinaz G. Jindani

The primary function of Domestic Violence Shelter is to provide safety for the clients after the experience of Domestic Violence. A 28 year old female, mother of two children was admitted to the shelter. Upon the arrival into the shelter, the client reported feeling safe (Phase I, 4 data points). Using Cognitive Behavior Theory, Relaxation techniques were introduced that included Deep Breathing, Progressive Muscle Relaxation and Music Therapy (Phase II, 12 data points). A 20 item scale measured anxiety twice a day. The data was tested for autocorrelation. Baseline autocorrelation $p=0.66$ and intervention autocorrelation $p=0.00$. The data for intervention was transformed ($p=0.09$). Proportion Frequency as applied using 30 or below as a desired zone. Proportion Frequency noted large enough differences between the phases ($p=0.00$). The D-Index noted 47% change in the desired direction. Through this project I learned that the domestic violence is life changing experience and it can result in a continuous state of anxiety and stress,

which can prevent problem solving. This provoked a deep concern within me. When the client could use the intervention and demonstrated resilience, I gained more confidence as a social worker, as I could see the intervention in action. I was delighted that I could engage the client such that the client responded positively. I learnt the value of measurement that informed the practice. I would not have known that the client is reporting coping just to please me or she is truly using relaxation techniques. The measure and the analysis subsequently confirmed that the client was truly making a progress. Through this process I have integrated theory, practice and research.

SW-17

MSW-II, Autoethnography

Acculturation and Making Meaning

Ana De La Cruz

Research Mentor: Dr. Shinaz G. Jindani

Like any other child I imagined to be doctor, someone who could help people heal and is in demand all the time. No sooner I realized a child psychologist is a person who talks to the children and listens to their stories, apparently this seems to help. This thought had a personal connection and meaning to me. Just when I was maturing out of my teen years, I sought help from social services. I experienced bureaucracy, lack of empathy and humiliation. This prompted me to seek a career in Social Work, as it purports compassion and empathy. It respects the personal narratives and forces us to see the life from the client's perspective, which serves as strength for problem solving. Since I was not born in USA and due to my experience of acculturation, Sociocultural theory appeals to me as this emphasizes the interaction between developing people and the culture in which they live. According to Vygotsky community plays a central role in the process of "making meaning". Social Work refers the community development as one of the systems that social workers intervenes with. Further Vygotsky states that, "learning is a necessary and universal aspect of the process of developing culturally organized, specifically human psychological function"

(1978, p. 90). This brought my childhood thought of child psychologist, my cultural experience and the community in which I live, together as one comprehensive part of my social work identity. Due to this I am now confident that my cultural identity is a source of a strength. As a bilingual social worker I can make far reaching impact to disenfranchised, isolated immigrant population.

SW-18

MSW I, Generalist

Quality and Quantity of Social Interaction and its Association with Happiness and Quality of Life

Chris Dial-Gilliom

Research Mentor: Dr. Shinaz G. Jindani

It is known that social interactions are common place for human beings as it is an innate quality to feel the need to have social connections. This innate quality poses the question of how much social interaction is required to have an impact on a human's happiness? It is proposed that increased quality and quantity of social interactions will have a significant positive impact on a person's happiness and quality of life. A research study was created through surveying individuals about their interactions with others in both quality and quantity to compare against their subjective view of their own happiness. It is predicted that while there will be outliers due to personality traits, a positive trend will be seen to correlate higher social interactions to higher happiness ratings. After reviewing the statistics of 100 interviewed subjects on their personality traits, quality of social interaction, quantity of social interaction, and their subjective view of their own happiness; it was found that a positive correlation was found between increased social connections and the subject's happiness rating. Personality factors were minimal but necessary to be assessed as introverts are less likely to have increased interactions compared to extroverts which are more likely to encounter others on a regular basis. The findings were deduced using a one-tail test based on the numbers received from the 100 participants. It can be concluded that a person that has higher quality connections is often found to be happier than those with

increased quantity with lacking quality interactions.

SW-19

MSW II, Evidence Informed

Anger Management as an Inevitable Component to a Child Diagnosed with DMDD

Annie Dunlap

Research Mentor: Dr. Shinaz G. Jindani

Bowen Family Systems Theory views the family as an emotional unit and uses systems thinking to describe the complex interactions within the family (Kerr 2000). Applying this theory to a single subject adolescent client who was waiting to be adopted. Evidence based intervention included Medication, Play Therapy, and Cognitive Behavior Therapy while his residence was in three different settings. Initially he was in a foster home and attended specialized school (7 data, phase I) and then was hospitalized (4 data, phase II). Upon discharge he was placed in a group home (5 data, phase III). Self-Reported Affect Scale and Self-Reported Anger Management scale was used to test the effectiveness of the intervention through all three phases. Using SINGWIN, both scales were test for autocorrelations and no trend was detected. Proportion Frequency was applied to each scale individually. Affect scale noted no significant changes from phase I to phase II ($p=0.57$). However, Phase II to phase III ($p=0.03$) noted significant change. This may be due to how he learnt to express his own feelings in therapeutic sessions. For Anger management, t-test did not note any significant changes between the phases ($p=0.13$). However, Delta Index noted 37% change in the desired direction. The data for phase III was not collected for this scale, as the client experienced crisis. Upon reflection I realized that as a social worker, the practice of being patient and letting the client grow at his/her own pace can lead to improved outcomes. What I had known all along, the data reaffirmed and presented it in a scientific context emphasizing how children need to be in stable residential setting v/s being moved around.

SW-20

MSWII, Autoethnography

Gaining a New Sense of Meaning Making Through Narratives

Annie Dunlap

Research Mentor: Dr. Shinaz G. Jindani

Having being raised by a single parent and not having developed feelings of belongingness, I have actively sought a personal touch from my friends and family. This has prompted me to practice genuineness and personalization while serving my clients. While working at the Department of Families and Children Services, I realized these and much more characteristics is purported by the profession of social work, which brought me to the door step of MSW program. The construct of personal sense appeals to me as this is the realm of what those things mean for us as part of our personal narratives about ourselves, our experiences, sense of place or even sense of ourselves. It is about how they resonate (or not) with our values, beliefs, judgments and knowledge. The realm of personal sense is where emotional experiences get burned into memory, where motivations and identities are negotiated, tried on, and appropriated or rejected (<http://blogs.oregonstate.edu/freechoicelab>)).

Through my life cycle, I have faced and actively face till today many challenges. MSW program has fostered in me a new sense of meaning making and has been a place for respite, as I learn not only new knowledge but also gain new personal meaning to my past events. This has been uplifting and empowering such that now I find strength and courage to be a single parent, manage four children, work full time at DFCS and conduct internship hours. In all this I have managed to regulate my own personal affect and yet grow to be my own person and a professional social worker.

SW-21

MSW II, Evidence Informed

Impact of Individual and Group Therapy on Relapse Prevention

Melvin Edwards

Research Mentor: Dr. Shinaz G. Jindani

It is not unusual to use Cognitive Behavior Therapy to help chronic substance user through the recovery process. In this project it was aimed to reduce negative distortion and increase positive thinking, so that the client will not relapse back into using substances. This was delivered through the use of Individual Counseling and Group Therapy. A 9 items scale was designed to measure positive/negative thinking related to relapse. The data was tested for autocorrelation. Phase I r^2 , $p=0.22$, Phase II r^2 , $p=0.00$. Phase II data was transformed. Proportion Frequency was applied. No significant differences between the phases was detected ($p=0.18$). D-Index noted 18% decrease in undesired direction. Since the data was collected continuous for 9 days, it is impossible for a chronic substance user to show progress in such a short duration. Through this project I learnt to use theory to inform social work practice situation. Research methods informed me that there was no progress, which was also attested by the client. Bringing everything together, has added to my confidence to practice as a social worker.

SW-22

MSWII, Autoethnography

Personal Experiences Informed My Personal Practice Philosophy

Melvin Edwards

Research Mentor: Dr. Shinaz G. Jindani

Given my personal experience with addiction and having been in recovery for over 15 years, I sought BSW and MSW degrees to help individual who experience challenges with addiction. When we talk of addiction people only imagine alcohol and drug abuse. There are many forms of

addictive behaviors such as shopping, over eating, not eating and remaining in toxic relationships. Through my life cycle I have learnt to respect all those who are trapped in any form of addiction, as it is rooted in how one feels inside. Changing environment can make a difference but a large enough. One must change perspectives and view oneself as a competent worthy individual not as someone who can simply be a slave to addiction. Using Maslow Hierarchy of Needs theory, one can empower as their needs are met beginning with bio-physiological needs. Therefore, recovery programs need to offer comprehensive services to foster the process of self-discovery that can propel individuals towards self-actualization. I practice gratitude daily and would help my client do so as well. As practicing gratitude will shift the perspectives from what one does not have to what one has and appreciate those things such as relationships with the loved one, positive regard and mere one's existence on this earth. I bring a larger message to the world that the life is a blessing, wrapped professionally with the paper of Social Work.

SW-23

MSW-II, Evidence Informed

The Impact of Reminiscence Therapy on Anger Management and Social Desirability

Marah N. Everett

Research Mentor: Dr. Shinaz Jindani

Reminiscence therapy is widely used the clients who experience Dementia. Reminiscence therapy is a treatment that uses all the senses; sight, touch, taste, smell and sound, to help individuals with dementia remember events, people, and places from their past. The single subject in this research was 89 year female who was diagnosed with Dementia related behavioral disturbance that included agitation and aggression. Using Epistemological Approach, Person-centered care was implemented that is a value-based commitment to supporting people with dementia and is a guiding principle in care services. This approach allows for partnership between the client and a social worker, honoring

client's values, and choices. This framework describes the process of therapy from the individual's viewpoint. Aggression (6 items) and Social Desirability (9 items) were used to measure the impact of intervention for five weeks. Ten data points were gathered and analyzed using SINGWIN. The data was tested for autocorrelation. For Anger Proportion Frequency was applied that detected significance between phases ($p=0.00$). D-Index noted 7% increase in desired direction. For Social Desirability, T-test was applied that noted significant differences between the mean of phases ($p=0.00$). Delta noted 50% increase in the desired direction.

SW-24
MSW I, Generalist

Social Media Usage and Stress

She 'Andra Famble

Research Mentor: Dr. Shinaz G. Jindani

My research study takes an in depth look at social media usage and stress influences on individuals. The association between stress and social media usage will be examined, whether stress is an indicator of social media use and tested arbiters of the relationships between the two. Social media is a growing industry that affect the lives of the current generation and future generation. The primary focus of the research was to find out stress levels of social media usage. Social media is a variety of sites such as Facebook, snapchat, twitter, Instagram etc. Does the more usage of social media have a high level of stress? My hypothesis is high social media usage equals high stress and low social media usage equal low stress. Although social media is a useful way to continue friendships, network, posting pictures, the convenience comes at a cost. Through my research I will conducted questionnaires to get a better understanding of the correlation

SW-25
MSW II, Evidence Informed

Depressive Mood Disorder and its Effects on Social Relationship

Orisbel Fernandez

Research Mentor: Dr. Shinaz G. Jindani

Research studies have shown that in order to maximize the effectiveness of symptoms associated with dysthymia, the person's psychosocial development and functioning must be address. This is particularly crucial in the prevalence of substance abuse. A great emphasis is placed on the social rehabilitation, enhanced meaning of life, spiritual and social connection. Healthy attachments to the environment influence the likelihood of improvement. The single subject design was a 65-year-old male diagnosed with Dysthymia, who reported feelings of loneliness. Evidence based interventions involved supportive therapy, psychoeducation, CBT activities and social enhancing exercises. Using a 9 items scale PHQ-9 for depression and 7 items from UCLA Loneliness scale the effectiveness of the intervention was measured. The data was tested for autocorrelation. The data was divided into two phases and proportion frequency noted no differences between the phases. Through this project, I have gained insight on the importance of measuring interventions. Furthermore, I learned that despite gaps in age, a therapeutic relationship can be developed successfully. Based on assessment, I was able to made recommendations for the participant that included, a referral for social rehabilitation, shelter plus to secure housing and a medication re-evaluation. In addition to individual interventions, I learned the value of internal collaboration between providers and how effective communication is imperative to the success of clients diagnosed with dysthymia and substance abuse disorder.

SW-26
MSWII, Autoethnography

Culture as My Teacher, Cultural Transition as a Process and Cultural Identity My Strength

Orisbel Fernandez

Research Mentor: Dr. Shinaz G. Jindani

My first exposure to Social Work, came at a time where my parents purposely walked us through an impoverished town in the Caribbean. We engaged in the donation of basic resources, including means to access education. At the age of fourteen, I moved to the United States with my maternal grandmother, along with my younger sister. As a teenager, I went through challenging times during this cultural transition. Navigating a foreign system and the hurdles associated with learning a new language, helps me to identify with individuals going through the process of acculturation. Due to a major childhood transition, I can pin point areas in which an individual can use psychosocial support to adjust in the acculturation process. As proposed by the ecological perspective, the environment has a direct impact in a person's life and behavior. Experiencing the difficulties of acculturation and feeling inadequate in the cultural process, set forth the foundation for pursuing an education in social work. In my research and through the interview of local mentors, I found ways in which to advocate, teach and connect others to services. As a bilingual and bicultural person, I have the potential to reach more people and have a greater impact in their lives. Based on the code of ethics, a social worker must be competent in the area of practice and provide clients with diverse approaches to meet their needs. Policy advocacy for culturally competent services has greatly influence my past and future professional philosophy. My practice model is to work and restore the individual from a holistic approach to promote change, equal opportunity and comprehensive clinical services. These are the services I wished someone had given to my sister and me in our transition to the United States.

SW-27
MSW II, Evidence Informed

Homelessness and Motivational Interviewing

Annie Foskey

Research Mentor: Dr. Shinaz G. Jindani

Individual psychological factors and issues have been said to play a pivotal role in the development of stress-related symptomatology. However, despite extensive correlation between stress-related ill health and mood disorders, the advances in research on emotional regulation and trans diagnosis have not been recognized to a considerable degree in stress research. In the current study, using a single subject client reported stress at work. Using Motivational Interviewing the client was encouraged to strengthen job search skills, reframing her negative thoughts and fostering positive messages to oneself. Trait Hope Scale was used to measure the optimistic attitude towards her job and family. The Hope Scale comprises of two sub-scale Agency (8 items) and Pathway (8 items). In all data points were gathered. Both scales were individually tested for autocorrelation and analyzed, using T-Test, that noted Test was applied that noted no significant differences between phases for Agency ($p=0.46$) and Pathway ($p=0.13$). Delta noted 17% decrease Agency scores in undesired direction. However, for Pathway Delta noted 31% increase in desired direction. This implies that the client had gained more confidence in seeking a path to a better job. Through this project I learnt to measure and tease out sub scale to be informed about het specific impact of the intervention on the client's lives. As I continue to grow, I will continue to measure the client's progress as it informs me about my own competencies and its effectiveness.

SW-28
MSWII, Autoethnography

Fast Forwarding: Making Global Impact

Annie Foskey

Research Mentor: Dr. Shinaz G. Jindani

My mother was motivated by her own Christian philosophy of helping others. This was infused in our values on a daily basis. Having grown up with such a positive reaffirmation and witnessing her help others, encouraged me to seek a Master's degree in Social Work. My teen years were tumultuous and coaxed me to think critically and make meaning of my own situation. I emotionally arrived at a place where I understood that the faith is not the only driving engine to help others. There are many other engines as well among which the first stood in my mind is "Humanity". To help without the boundaries of faith, race, creed or socio economic status. Due to this I have personally developed an agency "Mission to Kaptuku" which is based in a village of Kilifi County, near Mombasa Kenya. This agency serves school age children from 4-9. From building five classrooms to teaching technology skills grounded in their own cultural ways has fostered some levels of success of this project. As I did not wait to graduate to pursue my dream, I have fast forwarded my services goals to impact the world. MSW degree in this sense is a small step but a significant one, as it propels me forward with confidence and a specific sense of self efficacy.

SW-29
MSW II, Evidence Informed

Learning to Improve Self Esteem with Co-Occurring Disorders

Daeisha Fowler

Research Mentor: Dr. Shinaz G. Jindani

Co-Occurring disorders are often causes individuals' perceptions of life to be complex and difficult due to the developed symptoms and lack of maintenance in regards to substance abuse and mental health. Co-Occurring disorders are defined as dual diagnoses of a mental disorder,

such as schizophrenia or bipolar, as well as a substance abuse disorder, such as severe alcohol use disorder or cocaine use disorder. Individuals who are dual diagnosed may experience ongoing challenges and social deficits that could cause them to lack the fundamental social skills and self-image. In this study, the client has identified that her presenting problem was primarily lack of self-love. The ongoing interventions utilized in this study are "Talk Therapy" and "Role Play" of which "Talk Therapy" is used to help the client identify and express thoughts and feelings about her past while "Role Play" is used to help the client to gain social skills that can enhance her self-esteem, self-image, and self-talk. The client's self-esteem will be measured using the Rosenberg Self-Esteem scale.

SW-30
MSWII, Autoethnography

Learning Social Work Values

Daeisha Fowler

Research Mentor: Dr. Shinaz G. Jindani

The social work profession is a profession of advocacy, integrity, and service. Becoming a social worker has an ongoing effect on my life as a person from a student, to an intern, to becoming a professional. Although becoming a social worker was not my initial professional pathway, I have been able to learn new conceptualizations that has helped me change my perspective on how I can help vulnerable populations and different approaches that can be effective in displaying support to clients. Upon learning the National Association of Social Workers (NASW) Code of Ethics, I have learned the six values of the Code of Ethics which are: (1) Service (2) Social Justice (3) Dignity and worth of a person (4) Importance of human relationships (5) Integrity, and (6) Competence (2019). The presented values, along with the standards in the Code of Ethics, has molded me into a person of professionalism, integrity, and sustainability. While interning at Gateway Behavioral Health Services, I have had to the pleasure of shadowing a clinical social worker who has much experience providing counseling services within the Substance Abuse and Addiction field. Due to personal experiences

and professional gains, I have gained interest in the clinical concentration, working with individuals with co-occurring disorders which are mental health and substance abuse disorders. The social work profession has helped me to gain knowledge on how to advocate for others, while seeking to improve numerous communities.

SW-31

MSW-II, Evidence Informed

Balancing Self-Care while dealing with the Effects of Work Related Stress

Cyrus E. Hansberry

Research Mentor: Shinaz G. Jindani

This single subject research study is on the effects of work related stress and a case manager's ability to balance self-care in a high demanding job. Job related stress is one of the most important workplace health risks for employees. Job satisfaction has been considered as a crucial factor for employees with the provision of high quality case management and superior customer service within social services. The two surveys scales completed on the client were the Secondary Traumatic Stress Scale and Work Place Stress Scale. My research was completed my client over a period of four weeks. There survey scales were given to the client two times a day, twice a week, which focused on influences such as job satisfaction aspects, physical environment, feelings and overall job satisfaction. Results showed that job related stress can definitely be negatively associated with an employee's job satisfaction and performance. The consequence of the stress can possibly lead to less self-confidence, worsened job performance and even mental health issues. As the stress levels which are detrimental to people's health have increased; solutions to cope with the situation and maintain self-care is continuing to be explored and catch people's attention. This study focuses on problems social service case managers face which lead to stress; and it submits some possible solutions to the problems. The client reported adverse working conditions and management practices as common causes of work stress. Stress-inducing management practices included unrealistic demands, lack of support,

unfair treatment, low decision latitude, lack of appreciation, effort-reward imbalance, conflicting roles, lack of transparency and poor communication. Organizational interventions were perceived as effective if they improved management styles, and included physical exercise, taking breaks and ensuring adequate time for planning work tasks. Personal interventions used outside of work were important to prevent and remedy stress.

SW-32

MSW-II, Autoethnography

Sexuality and Gender Diversity as Sources of Empowerment

Cyrus Hansberry

Research Mentor: Dr. Shinaz Jindani

As a child I went everywhere with my mother, I literally mean everywhere. Shadowing her, at a very young age, I tended to think that I was somebody who can make impact just like her, as she was a social worker. She completed her MSW while working full time and managing me and my four siblings full time. Now I am doing the same, working full time and going to school full time. Now I wonder how she managed it all. As I review my life cycle, I find Psychodynamic Theory explaining most of my challenges. Despite my sexuality and feeling misunderstood a lot growing up; I have learned to appreciate contributions of both of my parents to my life instilling values and providing stability that has brought me through a fulfilled life cycle. Growing up I was challenged to find my voice within the family and even with my peers. My goal now through my work is to be that voice for those children and youth who experience oppression and isolation irrespective of their sexuality or gender diversity.

SW-33
MSW II, Evidence Informed

Fluctuations in Housing as a Major Indicator of Stability

Elizabeth Harris

Research Mentor: Dr. Shinaz G. Jindani

Our quality of life depends on how well our basic needs are met, as defined by the theoretical framework of Maslow's Hierarchy of Needs. Due to lack of environmental resources, our society has failed homeless individuals as their needs are not fully met. The continuous state of destabilization can trigger psychopathological symptoms as well. The single subject client experienced homelessness (phase I, 4 data points) and then found temporary housing (phase II, 11 data points) and then lost the housing again (phase III, 6 data points). Stability Indicator captured the fluctuations in how her safety needs were met. During the phase II and phase III, medication and Cognitive Behavioral Therapy(CBT), was delivered. In Phase II, that client received comprehensive services; housing, CBT and Medication, while in phase III the client received only medication and CBT. This is imperative, as the client was moving towards desired zone in phase II, but changed the direction in phase III towards undesired zone, which indicates that the lack of Housing threatened the safety needs. The Stability Scale scores were tested for the autocorrelation. The data for phase III was transformed and the trend was removed. T-Test was applied. The mean scores from phase I – phase II, noted 50% increase (Delta Index) yet it was not large enough to achieve statistical significance ($p=0.36$). The mean scores from phase II – phase II, noted 12% decrease (Delta Index). Fluctuations in stability scores can be attributed to the loss of housing, which directly threatened the safety needs.

SW-34
MSWII, Autoethnography

Using Multiple Theories at Multiple Levels to Inform Multiple Systems Integratively

Elizabeth Harris

Research Mentor: Dr. Shinaz G. Jindani

After being through many life challenges I finally met a social worker during my middle adulthood who was empathetic and non-judgmental. This gave me encouragement to complete GED and seek college education. Through many small steps I have arrived at the door steps of MSW program. Specializing in Clinical Social Work has propelled me to witness Psychodynamic Theory in action. This theory helps address family dysfunction and helps peel various layers of defenses. At times traumatic experience can callous you or make one more empathetic. With the help of a social worker, I have transitioned myself on empathy side. I believe that besides Psychodynamic, empathy and unconditional positive regard proposed by Carl Rogers can also play a positive role. Through this MSW program I have learn to use multiple theories at multiple levels to inform multiple systems integratively.

SW-35
MSW II, Evidence Informed

Using Goal Formation and Education to Regulate ADHD Behaviors

Jakhara Howard

Research Mentor: Dr. Shinaz G. Jindani

Attention Deficit Hyperactivity Disorder (ADHD) is a brain disorder marked by an ongoing pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development. The single subject research client was a preteen middle school student who was diagnosed with ADHD who had issues with focusing and behaving in school as well as completing assigned chores at home. Using Goal Setting Theory of Motivation, intervention was designed that implemented various activities such as recording goals, schedules, time management and writing a daily

journal to record feelings along with activities. The Teaching Rate Scale was used by the teacher to record behaviors and report any ADHD symptoms through the six weeks of intervention period. The data was tested for autocorrelation. No trend was detected. Using 30 and below as a desired zone, Proportion Frequency was applied which noted a significant difference between the phases ($p=0.01$). The D-Index noted the effect size of 42% change in the desired direction. Through this project I learnt to measure the client's progress that informed me about my very own sense of practice effectiveness. I also learn a shorter time frame may coax clients to produce results that may not be sustained, therefore a longer duration of intervention is more likely to yield in sustainable coping behaviors v/s a short time. Long duration will also produce accurate results and will thus inform me fostering my own sense of success.

SW-36

MSWII, Autoethnography

Self-Determined Social Worker: Informed by My Childhood Eyes

Jakhera Howard

Research Mentor: Dr. Shinaz G. Jindani

I was a hyper vigilant child and made my own independent efforts to make a sense of my environment that included impoverished neighborhoods, isolated community and low quality school education. This was my world through my childhood eyes. However, I was aware that there is a larger world outside that was presumably different. As a child I imagined a world full of resources (not just candies and toys) where many children could pursue their creativity. My mother did enroll in social work program before my birth but never graduated. This has unconsciously added to my very own determination to complete two degrees in social work. Money making is important but greed averts me. I have chosen social work so that I can use my very own background of impoverished neighborhood to connect the larger world with the isolated world. It is not surprising that the isolated neighborhoods exist even today, only its nature has changed dramatically. While I do

understand the role of medication in treating mentally illness, I am a proponent of enabling environment that will foster the development of health brains that will revert mental illness. I have grown to become a context relevant social worker, that help facilitate navigate resources, advocate for the communities such that their connection with the outside world will reduce depression, anxiety and many more diagnosis that a professional will detect. As a proactive social worker I want to foster healthy environment and help children build self-esteem that will lead to grounding and centeredness in their adulthood. Now it is obvious that the social work is my profession of choice and I hope this profession will be at the forefront of building inclusive communities, foster pluralism and provide secular platform for dialogue. As overly medicated society, we maintain isolation instead of integrating peoples in our nation.

SW-37

MSW II, Evidence Informed

Self Esteem and The Impacts on Critical Thinking In Child Welfare

ShaTara Jackson

Research Mentor: Dr. Shinaz G. Jindani

In stressful environments support and group work can benefit adult learners tremendously. Dobbs (2017) cites in the Role Environments that for professional development to be a successful one must establish inclusion develop attitudes, enhance, and engender competence; to ensure professional learning is enhanced. Wilkowsky (2013) notes that emotional safety and support learning in stressful environments for adult learners. For this subject a team encased the target with an intervention to ensure the to ensure the target felt supported. Information was presented in small groups to establish inclusion the subject's changes in attitude and perceived competence were noted. The effects of this effort were measured by Rosenberg's (modified) self-esteem questionnaire. The intervention utilized reflective transformation by Dewey (1993). Through this therapy the client was redirected to reflect when challenged by a decision or when struggling with processing. Rosenberg's

(modified) 10-item self-esteem questionnaire was given to the subject via link to Google Forms. The subject was provided six sessions with the researcher first and then was provided the scale with the other interventions the agency had committed to providing. The data followed a normal curve and there was no auto-correlation found of the data. The second phase did slightly better than the first phase, but the data was not statistically significant ($p=.21$). All the participants responses were above the cutoff on the positive side of the scale which contradicted the in-person data, this suggests a Hawthorne Effect on the data.

SW-38

MSW II, Autoethnography

The Work I Choose

ShaTara Jackson

Research Mentor: Dr. Shinaz G. Jindani

In my nine years of practice of child welfare I have been guided by a motto that I had made to draft in my first year of practice. I will remember the importance of the work I choose to do. As I have written what was important to me and what my vision and mission would be for my work I have had personal stake in my motto ever since. I haphazardly stumbled into social sciences, and social work was not any different. However, if I am more reflective my seemingly casual half handed decisions were calculated and aligned with a family built on service, and whose values have always enforced serving other prior to serving the self. Social Learning Theory obviously shaped my values and how I affect this world. It is no wonder it is the theory that most informs and shapes my practice. Desired and Undesired behavior to do antecedents have been the observation of my work and life experience. In my future endeavors I hope to practice more Problem-Solving Theory in the future, with individuals and with groups for my work with policy. Understanding root causes and building critical thinking in individuals and organizations is a powerful tool and solving most problems. My future in social work like my past will remain focused on service.

SW-39

MSW II, Evidence Informed

The Impact of Cognitive Behavioral Therapy and Parenting Classes on Anxiety Due to Domestic Violence

Swanette Johnson

Research Mentor: Dr. Shinaz G. Jindani

Solution- based casework is a comprehensive framework that enables engagement, assessment, intervention, case planning and management, that is informed by generalist and clinical social work practice methods. Grounded in family-centered social work this calls for a partnership between the social worker and the client. Comprehensive Child and Family Assessment (CCFA) at our agency helps the family identify strengths and needs such that the family's integrity is not only preserved but also enhanced. When a family experiences domestic violence, family's integrity is compromised. The single subject client for this study was a parent who reported anxiety due to the experience of domestic violence. Parenting classes were implemented using Solution- based casework and Cognitive Behavior therapy was delivered via talk therapy to help reduce anxiety levels. An instrument with 11 items measured anxiety levels and self- perceived benefits of parenting classes for 10 weeks producing 20 data sets. First three weeks only CBT was implemented and thereafter Parenting classes were added. Even though proportion frequency did not note a significant difference between only CBT and CBT plus Parenting classes, the Delta Index noted 45% decrease in the desired direction.

SW-40
MSWII, Autoethonography

My Autoethonography on Social Work

Swanette Johnson

Research Mentor: Dr. Shinaz G. Jindani

Having exposed to an adoption of a six-year-old child, I learnt the role of a social worker as not only positive but a necessary one. This prompted me to seek BSW and now MSW along with an internship with a Public Child Welfare agency. This internship has exposed me to witness Solution Focused Therapy in action. As I implemented Solution Based Case Work, I started paying attention to the client's needs and wants v/s what I thought that client needed. I truly believe that solution is the one that client's finds for himself/herself. I have learnt to begin where the client is by asking what he/she is doing currently to initiate behavioral and/or life style changes. Compassion and empathy bring forth what he/she can do v/s what he/she has failed doing. As a social worker I have now learnt to weave Solution Based Case Work with Solution Focused Therapy, after all they belong to the same continuum from generalist social work to clinical social work. As I move forward I have arrived at a resolution that social work methods can only fail if it is not rooted in compassion and empathy. One can only develop these through constant practice, reflection and contemplation. This is basic to our survival as a humanity and establishing a world peace to last at least through the next generation.

SW-41
MSWK I, Policy and Practice

Child Abuse Prevention and Treatment Act (CAPTA) of 1974

Swanette Johnson

Research Mentor: Professor Evelyn Dennard

Social concerns come about daily however, a significant social concern the become so prevalent the act that help with prevention and awareness has been amended on plenty of occasions. This social concern is child abuse and

neglect. According to a TED Talks published video clip, *How Childhood Trauma Affects Health Across a Lifetime* (February 2015), Pediatrician Nadine Burke Harris stated, "Traumatic events range from adverse childhood experiences, domestic violence, parent separation or divorce, abuse and neglect of any kind, parental mental illness, and sometimes parent incarceration". She proceeds to discuss the relationship between repeated stress adaptors as such and the effects on the child's development. It is safe to say children who experience abuse and or neglect of any kind are placed at possible risk for developmental delays emotionally, socially, and cognitive skills. In 1974 of January 31st, Congress enacted a federal law The Child Abuse Prevention and Treatment Act (CAPTA). CAPTA was amended for prevention and response to child abuse and neglect. By doing so CAPTA, "provides federal funding and guidance to states in support of prevention, assessment, investigation, prosecution, and treatment activities" (Child Welfare Information Gateway, 2017). CAPTA also provides grants. Those eligible to receive the grants are public agencies, nonprofit organizations, Indian Tribes and tribal organizations. Another role includes, identifying and delegating federal roles in supporting research, evaluation, technical assistance, and data collection activities. As a federal law CAPTA, also set forth definitions of child abuse and neglect on a federal level. Like most laws, grey areas are present and causes loopholes for the policy to thrive to its maxima capability.

SW-42
MSW II, Evidence Informed

Depression and Anxiety

Shegin Jones

Research Mentor: Dr. Shinaz G. Jindani

"Depression and anxiety disorders are different, but people with depression often experience symptoms like those of an anxiety disorder, such as nervousness, irritability, and problems sleeping and concentrating. But each disorder has its own causes and its own emotional and behavioral symptoms. Many people who develop

depression have a history of an anxiety disorder earlier in life. There is no evidence one disorder causes the other, but there is clear evidence that many people suffer from both disorders." (ADAA; 2010-2018) The client is a female in her mid 40's and diagnosed with depression and anxiety. Over the years she has suffered from another disease, alcoholism. She has now been sober for almost three months and getting her life back on track as a Dental Hygienist. With the recent responsibilities of work, being homeless and being in early sobriety her depression and anxiety increases. The client is given tools, on top of the tools already using, to help decrease depression and anxiety when arisen. The client measures her depression and anxiety with a self-scale of 10 questions, two times a week. The data was tested for autocorrelation, (depression) $p = .606$ and (anxiety) $p = .777$. The client showed no significance in progress in the decrease of depression and anxiety according to the autocorrelation. The interventions were not measured long enough to show significance to the study of using CBT to decrease depression and anxiety in this client.

SW-43

MSWII, Autoethnography

Arriving Full Circle: Seeking Harmony.

Shegin Jones

Research Mentor: Dr. Shinaz G. Jindani

Growing up all I seen was negativity and no real family orienting behaviors. Observing these behaviors around me taught me that I wanted to behave differently than my family. I came to realize growing up that my family was only modeling behaviors that were taught to them. In Albert Bandura theory, he believed in classical conditioning and operant conditioning, but he added two ideas about mediating processes occur between stimuli responses and behavior is learned from the environment through the process of observational learning. This theory has informed my social work practice and to continue positivity outside of my practice because your behavior could impact some tremendously. Bandura theory informs my practice because I look at each client separately on where they are

and understand, they're circumstances are informed by behaviors modeled to them in their environment. If they had been given the tools, then their circumstances would be different. I used to blame my family for the dysfunction but now I appreciate the lessons it taught me and unknowingly informing my social work practice.

SW-44

MSW II, Evidence Informed

An Intervention for Regulating Anger for a Neurocognitively Challenged Client

Jameka Kirkland

Research Mentor: Dr. Shinaz G. Jindani

Anger become a concern when individuals express it out of context, too intense, or are expressed in an inappropriate manner. (Reilly & Shropshire, 2002). Excessive anger can cause harm to one's physical and mental health. The single subject in her sixties, widow with no children, displayed several symptoms of anger expressed as yelling and hitting at objects such as the television. The client was diagnosed as Neurocognitively Challenged, which was supported by confused conversations and lack of memory. The client reported both verbal and physical symptoms of anger. Using Cognitive Behavior Theory, the evidenced-based interventions psychotherapy/talk therapy and daily journaling were implemented for 6 weeks to measure its impact on anger management. The client responded to a 10-item Anger Management questionnaire from Santa Barbara City College. The data was tested for autocorrelation. No trend was detected. Proportion Frequency was applied. The client did not show the progress, but reported increase in anger. The D-Index noted 28% increase in undesirable direction. Due to this findings, now the client has seven days a week in-home health services to help facilitate coping. Had I not measured, I would not have reached the conclusion and conceptualized the gravity of Neurocognitive degeneration. This client would have gone without help and only exacerbate low quality of life. Through this project I learnt to integrate assessment, intervention, theory and research methods. Now I can comprehensively

know how to inform my practice.

SW-45

MSWII, Autoethnography

Facilitating Connections: From Seeking Resources to Resolving Isolation

Jameka Kirkland

Research Mentor: Dr. Shinaz G. Jindani

At a very young age, I emotionally took responsibilities for me and my family members, as I witnessed my single parent struggle providing for four children. Not fully understanding this as a child, I sought external resources to educate myself, to grow up quickly so that I can take care of what was not taken care of by my single parent despite constant efforts. This was further complicated as I witnessed physical and intellectual disabilities in my family. At times feeling helpless it propelled me into a search for resources to help these family members as they got classified as “Special Needs”. This drive brought me to seeking social work profession of my choice. The system theory helped me grapple with lack of resources and social work practice methods taught me how to navigate resources and stay in problem solving mode. The Internship at Hospice flabbergasted me at first, where I soon learnt that these families had similar struggles, navigating resources for their loved ones. I experienced that they were facing issue of discrimination, living in impoverished areas and being isolated from the rest of us and even denied of human rights. Diversity issue of non-inclusion and isolation became live as I facilitated hospice client get connected with their families and external world. I realized that irrespective of the source of disability, being part of normal stream of society will reduce isolation and foster their contributions in our society we have less imagined thus far. It is we how think we are normal, needs to broaden our view of them and understand their contribution in our lives. To forge such connection, I have now grown to be a pluralist in my outlook, and understand that I do not have answers to the problems. Best answer is only obtained when I permit various perspectives

to engage in a dialogue to arrive at solution that is innovative and truly engaging all parties as they have ownership in problem solving. I have learnt to become a facilitator and offer a platform for a dialogue. The profession of social work can spearhead pluralism as their agenda to forge connections as we continue to evolve.

SW-46

MSW I, Generalist

Family Relations of Military Families

Kianna Laing

Research Mentor: Dr. Shinaz G. Jindani

The United States military includes four branches; Army, Marine Corps, Navy and Air force. The active component of these individuals “compromise just under 1.29 million or less than 0.5 percent of the U.S population”. Veterans on the other hand, are a larger number and include approximately “18.5 million individuals across the U.S.”. (US Census Bureau, 2018). The family specifically faces extended separations, frequent moves, stressful conditions, and emotional tolls associated with the impact of combat on the service member’s health and reintegration after deployment. “Adapting to these factors leads to stress and affects the dynamics of the family. The mental health of all members - parents and children alike - is impacted by the family's skill in addressing the issues posed by these experiences”. (Weber Libby, 2010) The current study aims to compare the family relations of Active Duty service members and Veterans, hypothesizing that the Veterans will report higher levels of Family Relations than Active Duty Service Members. Using a sample of convenience, approximately 100 participants that have served in the United States military at some point within the last 10 years will be requested to complete a modified Index of Family Relations (IFR) scale (Hudson, 1992) that has 25 items measured on 1-5 Likert Scale. Non Parametric Statistics will be used to study the association between the variables. Suggested findings and social work practice implications will be discussed.

SW-47
MSWK 1, Policy and Practice

Child Abuse Prevention and Treatment Act (CAPTA) of 1974

Kianna Laing

Research Mentor: Professor Evelyn Dennard

The Child Abuse Prevention and Treatment Act (CAPTA) was created originally by congress on January 31st, 1974 to focus on prevention and response to child abuse and neglect. Child abuse could be defined as any “act or failure to act on the part of a parent which results in death, serious physical or emotional harm, sexual abuse or exploitation, or an act or failure to act, which presents an imminent risk of serious harm”. CAPTA has been modified and updated several times over the past 45 years, most recently in 2016 with an added provision focusing on victims of trafficking and substance abuse recovery. The federal government mandates the enforcement of CAPTA by providing funding to states which are required to implement systems for handling abuse allegations and ensuring the safety of all children. Guidance is given to states that assist in the assessment, investigation, prosecution and treatment for victims of child abuse or neglect. CAPTA is a positive addition to child welfare services and serves as a guide for what needs to be done to combat child abuse in the U.S, however there are gaps in services on the micro level. Child protection services don’t always have the resources to identify and assess every case of child abuse which leads to children “slipping through the crack” which should never occur and have deadly results. It is recommended that a way to employ more employees in the field could lead to more efficient investigations into child abuse cases in smaller locations.

SW-48
MSW I, Generalist

Linking Spirituality and Healthy Grieving Karizma Lester

Research Mentor: Dr. Shinaz G. Jindani

Dealing with end of life or loss of a loved one can be very devastating, and the grieving stages can carry out for some time. People with religious practices, faith, and spirituality find that their practice will address death and dying regularly. There aren’t very many studies showing the association with spirituality and ways that it could influence coping and healthy grieving in the Social Work field. The current research proposal will explore the correlation between spirituality and how it can affect the outcomes of coping with end of life, loss, and grief. The study will be conducted at a local hospice agency. The tools used in this study will be a Questionnaire given to the participant’s families that are coping with their loved ones’ illness during the end of life. They will also receive monthly ancillary contacts after their loved one has passed to assess if they are grieving in a healthy manner or not. Once the surveys are complete it will be determined whether or not families with spiritual backgrounds have healthier coping strategies. For example, the participant may answer statements such as, “I have slowly come to accept god’s decision for taking away my loved one from my life” or “I am certain that my loved is now at peace having passed from this earth”. The participant will strongly agree, Agree, Disagree, or strongly disagree. The codes will range from four points, meaning strongly agree, to one selecting strongly disagree. The scores will be converted into the database for conclusion of the study’s findings.

SW-49

MSW II, Evidence Informed

Regulating Stress Through Self Care Remedies and Healthy Coping

Justice A. Lewis

Research Mentor: Dr. Shinaz G. Jindani

Depression is a mood disorder that causes a persistent feeling of sadness and loss of interest. College depression isn't a clinical diagnosis. Instead, college depression is depression that begins during college (Mayo Clinic Staff, 2018). The transition from high school and college is a major adjustment for students especially first-generation college students. Learning to balance academic-related assignments while maintaining a healthy mental, emotional, and social well-being is very critical for students enrolled in a four-year university. This study implemented Psychotherapy and Psycho-Education group sessions and measured a change within a client with a Depressed mood due to high levels of stress. The first baseline phase gathered four data points. The second phase implemented Psychotherapy and Psycho-Education group sessions (Intervention) and gathered ten data points. A comprehensive measure DASS-21 scale was used that measures depression, anxiety and stress. The data was tested for the autocorrelation, baseline $p=0.90$, intervention $p=0.00$. Transformed data was used for the analysis. Proportion Frequency noted significant differences between baseline and intervention phases ($p=0.00$). Delta noted 39% decrease in the desired direction. Learning to measure the client's program was enlightening, as it gave me insight into client's progress. I learnt to be patient with the client and let her grow at her own pace. Holistic perspective is a combination of theory, practice and research that it gives me a sense of practice effectiveness and contributes to my growth as a professional social worker.

SW-50

MSW II, Autoethnography

Building on My Experience: Complementing My Competencies

Justice Lewis

Research Mentor: Dr. Shinaz G. Jindani

Many would think that sexual abuse without question has only negative impact. I am here to proclaim the difference. This experience is not changeable or trash-able either. Through my very own process of meaning making, this experience is now a source of motivation that keeps me grounded and centered. This experience created many emotional and mental related issues which is evident by my period of low self-esteem and depression. This event motivated me to want to pursue a career as a change agent to provide clinical care to individual who have encountered traumatic events and/or significant changes. Utilizing the Strengths Perspective and Cognitive Behavioral Theory I proudly inform my practice using the childhood experience as an asset rather than a barrier to my practice. This framework identifies the strengths within individuals instead of focusing on the deficit the person faced. The use of CBT is very imperative when assisting individuals with abusive, oppressive experiences. The theory works to change the negative distortions which impacts their feelings and behavior. I have learnt that the experience in itself is not enough. Educational preparation along with competency tool box can truly be empowering a social worker. Through my matriculation in the Social Work profession its very professional and ethical for me to become a licensed professional and continue attending professional development events to ensure I practice competence with my desired population

SW-51
MSWII, Autoethnography

If You Are Walking Down the Right Path

Alexis Mack

Research Mentor: Dr. Shinaz G. Jindani

If I believe in what I want to do there is no reason I will not succeed. I have my faith and my family's support. All things are possible. Selecting the Master of Social Work program at Savannah State University has given me the opportunity to experience both a personal and professional level of my culture at a Historically Black Colleges and University. This was an opportunity for me to grow more as a young African American woman in my career. I want to be able to have a career knowing that the education I have will stay with me. I need my Masters to be able to follow the career path that I feel God has lead me on. I want to have all the tools I need for my career and I feel that Savannah State University is the institution that will give me the opportunity to succeed. I have worked hard to get this far. I learned in order to get what you want you must sweat a little, listen a lot and work even harder for it. I am ready to give it my all to achieve my goal. My goal is to demonstrate a commitment to life-long learning and apply the competencies and Code of Ethics to individuals and families through my career. This was the next chapter in my life, and I am glad it with Savannah State University. I worked hard, had a positive attitude, been a team player, and understand how important this opportunity will be for me. I took advantage of all the classes that Savannah State University has to offer me. This was the time for me to broaden my scope. I was like sponge and took it all in, had the tools to be able to work in my field and grow as I learn more and more. I need to get ahead and stay ahead in the career I have chosen. This career keeps you on your toes because the laws are constantly changing, each family will be different, each child is not the same, and most of all I want to make a difference.

SW-52
MSW I, Generalist

Hope as a Fuel of Work Ethic

Michael Martin

Research Mentor: Dr. Shinaz G. Jindani

In 2006, then Senator Barack Obama authored the book entitled, "The Audacity of Hope." Senator Obama would eventually move ahead into history as President of the United States and provide a great deal of hope to the entire nation through his presidency. Hope is defined as a belief of something that you want to happen in the future. Hope provides purpose and direction, even during the most difficult chapters and challenges of life. When hope is lost, the results are most often disastrous, with individuals experiencing severe depression or even attempting suicide. This study explores the relational significance between existing levels of hope and the manifestation of hope in the form of individual's work ethic. This is based on the assumption that an individual's hope plays a major role in the day to day labors of accomplishing one's ambitions, such as pursuing significant career or life goals. This study hypothesizes that a student with a higher level of hope will demonstrate higher levels of work ethic, and consequently, he/she is more likely their life goals. The questionnaire uses Trait Hope Scale that contains 15 hope items and 10 work ethic items. This tool will be administered to the students in informal settings such as parking lots and cafeterias. Since this research uses a sample of convenience, non-parametric statistics will be applied. Findings will explicate the relationship between hope and work ethics.

SW-53
MSW I, Generalist

Life Contentment in Residential Facilities

Kendall Mayfield

Research Mentor: Dr. Shinaz G. Jindani

This research explored the relationship between feeling safe and life contentment. According to Maslow Hierarchy of Needs individual's lower needs must be met first for them to move at a higher level and attain self-actualization. This research assumes that as individual attain higher stages, they are more likely to report higher life contentment. It is important that an individual feel safe and nurtured in their environment. When these two basic needs are met, individuals are more likely to report higher life contentment. This research gathered data at Emergency Service Shelter and Permanent Living Facility. Using the sample of convenience, paper pencil questionnaire gathered 31 completed data. Acceptable levels of Reliability were attained for both scales of Safety (7 items, $\alpha=0.81$) and Life Contentment (14 items, $\alpha=0.85$). Chi-Square Test of Association detected significant differences between the group that reported Low Safety and Low Contentment. The findings were in the predicted directions.

SW-54
MSW I, Generalist

Early Exposure to Sexual Content and Its Effects on Feelings Towards Infidelity

Dominique Mitchell

Research Mentor: Dr. Shinaz G. Jindani

In Georgia, adultery is defined as one spouse having sexual intercourse with a person other than his or her spouse while married. When adultery is the cause of a divorce in Georgia, the spouse that was unfaithful is barred from receiving alimony. It's not enough that one spouse cheated during the marriage - the infidelity has to be the reason for the divorce for it to result in a ban on alimony. This research hypothesizes that the individuals who are

exposed to sexual content at an early age of 14 or younger are more likely to support infidel behavior. This questionnaire will be administered using Google docs to the adults who are 18 years and older and are currently or have been sexually active. Participants will read informed consent and only after consenting will answer the questionnaire, that has 12 items on infidelity and 8 items on exposure to the sexual content. Since it uses sample of convenience, non-parametric statistics will be used to analyze the data.

SW-55
MSWK 1, Policy and Practice

Latchkey

June Monroe

Research Mentor: Professor Evelyn Dennard

This policy analysis will examine the policy surrounding latchkey children and the gaps that increase the likelihood of child welfare issues. This system is necessary due to parents' work schedule. It is estimated that over 40% of child are left home alone at some time. The legal age a child can be left at home varies from state to state. Some 8-10 years-old, other are 11-14 years-old. There are many issues and potential risks when children are placed in this situation. Potential unsafe situations such as medical emergencies, fire, alcohol, drugs, strangers, and guns increase the likelihood of child welfare involvement. A population that is of interest to this research is low-income mothers in single family homes. Social welfare polices encourage low-income mothers to work full-time, these polices may increase the probability that their adolescent children spend some time at home alone after school. This gap in the policy does not account for how this requirement leaves low-income mothers in a quandary to receive social welfare services. I recommend the renaissance of community centers in low-income communities with certified counselors, teachers, recreational therapists to provide beneficial after care services to this vulnerable population of children they are serving.

SW-56
MSWK 1, Policy and Practice

Child Abuse and Neglect

Jakerra Morrow

Research Mentor: Professor Evelyn Dennard

In this country, one of the risk concerns is that of child abuse and neglect. Huffington post article entitled “Boy Died After Mistaking Dad’s Meth for Breakfast Cereal: Police” highlighted the story of an 8-year-old boy in Indiana who overdosed on grams of Methadone. The article states the toxicology report showed “180 times the lethal amount of the drug.” After the boy overdosed, the father did not call 911 with fear of going back to prison (Moye 2018). Although Cases such as this are becoming more common, the Federal Law does not tolerate child abuse or neglect. The legal definition of child abuse and neglect is “Any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation”; or “An act or failure to act which presents an imminent risk of serious harm.”(CAPTA 42 U.S.C.A. § 5106g) This definition is outlined in the Child Abuse Prevention Act of 1974 and last amended in 2016 (CAPTA 2016). More specific laws governing child abuse and neglect are left to the state governments. One of the unique state laws that have been passed is that of the Senate Bill 939 in Texas. This bill was an amendment to the already existing Human resource code. The bill “requires that public and open-enrollment charter schools post in an open, visible location the toll-free child abuse hotline number operated by the Department of Family and Protective Services (DFPS) in both English and Spanish (National Conference of State Legislators 2019). As we study this law and laws like it, we hope to analyze child abuse and neglect in this country from the perspective of how far we have come and how far we have yet to go.

SW-57
MSW I, Generalist

Social Media and Clinical Stress

Jakerra Morrow

Research Mentor: Dr. Shinaz G. Jindani

There is no disagreement about how the millennials have grown to live with social media. With the easy access and affordability, social media seems to direct our basic life function and without it at times, it appears that we are unable to cope and solve daily problems. The goal of social media was to facilitate problem solving, now with its explosion it has become a problem in itself such that now it could be a major source of stress. According to one study (Twenge, 2019) students who spend more time using smart phones and other electronic devices are less satisfied with their lives than students who frequently engage in face-to-face interaction. Further the study notes, that teenagers who spent five or more hours a day, were 71% more likely to have at least one suicide risk factor such as depression, making suicide plan or attempting one, as compared with those who spent less than an hour a day. Given this, this research explores the association between social media and clinical stress. It uses 20 self-created social media items and 11 clinical stress items (Walymers Scales) and assesses the participant’s response on a 4 point Likert Scale. Using the sample of convenience this questionnaire will be administered on campus in informal settings. The participants will be offered informed consent and only after consent they will be administered the questionnaire. IBM Statistics SPSS will be used to test reliability and hypothesis. Findings will be discussed using social work perspective

SW-58
MSW II, Evidence Informed

Impact of Cognitive Behavioral Therapy, Yoga, and Socratic Dialogue on Work-Related Stress

Shekinah Nelson

Research Mentor: Dr. Shinaz G. Jindani

Individual psychological factors and issues have been said to play a pivotal role in the development of stress-related symptomatology. However, despite extensive correlation between stress-related ill health and mood disorders, the advances in research on emotional regulation and trans diagnosis have not been recognized to a considerable degree in stress research. In the current study, using a single subject design, with a baseline and intervention phase, 2 treatment interventions are being measured by a 15-question data collection tool with a 4-point (1-4) Likert scale. The treatment interventions, targeting reduction of work-related stress, were implemented on one patient suffering from intense stress. The data was tested for autocorrelation; phase I $p=0.03$ and phase II $p=0.64$. The data for phase I was transformed ($p=0.36$). The transformed data was used for the analysis. A T-Test was applied and it noted a significant difference between the phases ($p=0.00$) in the opposite direction of that which was predicted in the hypothesis. The Delta Index noted 46% increase in undesirable direction. Further investigation of the treatment effects may be beneficial.

SW-59
MSWII, Autoethonography

Hey Black Child: An Autoethonography of Resisting Helplessness and Embracing Hope

Shekinah Nelson

Research Mentor: Dr. Shinaz G. Jindani

In my short life I have seen many things, felt many things, and for a reason. I thought that I had overcome many things. Abuse, poverty, and

crime are the three things that made me feel helpless from childhood up into womanhood. They shaped my entire worldview and held me like a prisoner inside for years. These feelings also ignited a fire in me. It was smoldering for years. Through the process of self-discovery, a process of meaning making gave a new definition to Abuse, poverty and crime. When I felt that my life had no purpose, it pushed me to dig deeper, hopelessness turned into hopefulness. MSW program has added to my hope as it has now armed me to face my life challenges, head-on.

SW-60
MSW I, Generalist

Generalized Contentment in Later Adulthood

Josetta Palmer

Research Mentor: Dr. Shinaz G. Jindani

According to Erik Erikson's Theory of Psychosocial Development all individuals must overcome or resolve all eight stages successfully in order to adjust well to the environment (psychology notes 2017). He predicts that through each stage crisis/challenge has to be resolved in order to gain psychosocial capacity to cope in our daily lives. This research hypothesizes that the individuals who have successfully gained coping capacities will report higher levels of life contentment. Using the sample of convenience after church services, persons who are older than 50 years will be approached and offered informed consent. Once consented, they will be offered a questionnaire that uses 1-4 Likert Scale and has 28 items on Erickson stages of development and 7 items on Life Contentment, along with few demographics questions. IBM Statistics SPSS will be used to analyze the data and assess the association between the eight stages and Life Contentment. Findings will hopefully inform us about how important these eight stages are for us to complete successfully in order for us to achieve life contentment at a later adulthood stage. Recommendations for the profession of social work will be discussed.

SW-61
MSWK 1, Policy and Practice

Runaway, Homeless, and Missing Children Protection Act (RHMCPA) OF 1996

Josetta Palmer

Research Mentor: Professor Evelyn Dennard

The Runaway, Homeless, and Missing Children Protection Act policy is has been amended to the Runaway and Homeless Youth Act and has provisions to include testing for sexually transmitted diseases from local centers, capacity limitations on eligible runaways for homeless youth centers, maternity homes considered transition living, extension of the 540-day eligibility period, adequate plan to ensure referral to social service, law enforcement, educational opportunities, vocational training, welfare, legal service and health care programs, coordination of programs and services, 18 years of age is maximum age limit for youth seeking shelter, strategies for ending youth homelessness, study of long-term housing strategies for youth after exiting program, restrictions for use of funds. The policy is to include strategies to end youth homelessness by offering gateway services, services to shelter and stabilize youth, targeted supportive services and programs supporting youth transition to independence. A gap in these strategies is there are not enough facilities implementing the programs to accommodate the large number of youths that are homeless. According to the US Department of Health and Human Services there are just over 180 evidence programs located throughout the nation. The current administration has slated \$2 billion in grant funding to support only 7, 300 programs nationally and there is a range of up to 2.8 million American youths homeless. A recommendation to assist with funding the programs are incentives for larger corporations that support programs within their city or donate to these programs to ameliorate youth homelessness

SW-62
MSW II, Evidence Informed

Monitoring Progress of Evidence-based Intervention Towards Emotional Regulation of DMDD Client

Estelline O. Payne-Beamon

Research Mentor: Dr. Shinaz G. Jindani

Many families of children with severe emotional and behavioral disorders materialize needing the assistance of child welfare agencies when they no longer have the capacity to provide for their child's safety or well-being. This single-subject research validated the impact of evidence-based interventions (Cognitive Behavior Therapy, Individual Therapy, Group Therapy, Family Therapy, Solution-focused Casework, and psychotropic medication) used in a psychiatric residential treatment facility and case management to promote improved relationships between the 15 y/o client diagnosed with Disruptive Mood Dysregulation Disorder (DMDD) and his family/peers. Use of the Emotional Regulation Questionnaire (ERQ), a 10-item scale measured respondents' tendency to regulate their emotions in two ways: (1) Cognitive Reappraisal and (2) Expressive Suppression. The data as tested for autocorrelation (baseline $p=0.04$, Intervention $p=0.05$). Trend was detected. The transformed data was used for the analysis. As the data was normally distributed T-Test was applied, that detected significant differences between the averages of two phases ($p=0.005$). Delta noted the Effect Size of 36% increase in the

SW-63
MSWII, Autoethnography

Developing A Pluralist Perspective and Arriving at a Personal Practice Philosophy

Estelline O. Payne-Beamon

Research Mentor: Dr. Shinaz G. Jindani

It was impossible to comprehend the impact of immigration law on my family at the age of nine.

My parents were taxpayers, business and home owners and earnest members of the society. However, they were isolated at times. The immigration laws in the U.S. are continuously in a state of chaos, but the situation in last 30 years has not changed very much. The recent incident with Twenty One Savage attests to the confusion. Growing up as a somewhat isolated child, I was fortunate to participate in the Upward Bound Program at Savannah State. That brought me to the door step of BSW program which fostered a pluralist thinking within me. I learned from diverse groups of individuals, including clients. I fostered partnership and reciprocal relationships which allowed me to see first-hand the impact of my behavior on others in my family and on clients. Many new ideas were born just because of those interactions. This speaks volumes to the humanness that we as beings all share. Our commonalities are greater than our differences. In my career development and in my work, I realized that problem solving was not an isolated activity. For only in relation to other partners can a person see sustainment in relationships and goal achievement. It is sustained fellowships and relationships at work and within my family resources of home that influenced and guided me to today. My life course has included experiences with military family life, a sustained marriage with a husband who was frequently deployed, caregiver and guardian for disabled family members, and mother of two sons. Yet, the pursuit of higher goals in life continues to be a source of my centeredness. Today, as I continue to work in child welfare with foster children in preparation for transition to adulthood, using Lev Vygotsky's Socio-cultural Theory leads my ability to see how social interaction with these children during their teen and young adult years precedes their development. It is through my interaction and socialization with them that social behaviors are produced that lead to their own consciousness and cognition about how they will develop values, beliefs, customs, and skills.

SW-64
MSW II, Evidence Informed

Regulating Fear & Anxiety: Increasing Social Intercourse

Jasmine Phillips

Research Mentor: Dr. Shinaz G. Jindani

Social anxiety disorder involves an intense fear or phobia of social and performance situations. Many teenagers go through periods of normal anxiety related to the changes that go along with adolescence, those with Social anxiety disorder, experience fear that is out of proportion to the situations that they face. For some teenagers, social anxiety becomes chronic, affecting school performance, extracurricular activities and the ability to make friends. This single subject research client was a teenager who was suffering from social anxiety and was interested in better coping skills for the anxiety. Lebowitz Social Anxiety scale was used. This 24 item scale was modified to fit the situation. The client received the scale weekly and was also assigned weekly assignments based off of systematic exposure of the cognitive behavioral theory. activities such as speaking to individuals she wouldn't normally speak too and increasing eye contact with them were assigned.

SW-65
MSWII, Autoethnography

Regulating Affect Growing to Be a Professional

Jasmine Phillips

Research Mentor: Dr. Shinaz G. Jindani

Having being raised by a single parent and not having developed feelings of belongingness, I have actively sought a personal touch from my friends and family. This has prompted me to practice genuineness and personalization while serving my clients. While working at the Department of Families and Children Services, I realized these and much more characteristics is purported by the profession of social work, which

brought me to the door step of MSW program. The construct of personal sense appeals to me as this is the realm of what those things mean for us as part of our personal narratives about ourselves, our experiences, sense of place or even sense of ourselves. It is about how they resonate (or not) with our values, beliefs, judgments and knowledge. The realm of personal sense is where emotional experiences get burned into memory, where motivations and identities are negotiated, tried on, and appropriated or rejected (<http://blogs.oregonstate.edu/freechoicelab>).

Through my life cycle, I have faced and actively face till today many challenges. MSW program has fostered in me a new sense of meaning making and has been a place for respite, as I learn not only new knowledge but also gain new personal meaning to my past events. This has been uplifting and empowering such that now I find strength and courage to be a single parent, manage four children, work full time at DFCS and conduct internship hours. In all this I have managed to regulate my own personal affect and yet grow to be my own person and a professional social worker.

SW-66

MSW-II, Evidence Informed

Cognitive Processing Therapy/ Prolong Exposure and Veteran PTSD

Ivette J. Rains

Research Mentor: Dr. Shinaz G. Jindani

In 2018, the military consist of over 1.5 million service members, this does not include more than 20 million veteran living in the United States or the 100 newly enrolled veterans a month (DMDC, 2018). While service members are synonymous with a great capacity for resiliency, there are a number having acculturation difficulty with mental health impacting their transition. As many are diagnosis with PTSD the Veteran Health Affairs have extensive research resulting with effective treatment of PTSD symptomology with the use of Cognitive Processing Therapy alone or a combination of Cognitive Processing Theory with Prolong exposure. CPT using the theories from Bandura's social cognitive theory

and Lang's information processing theory for PTSD or also known as emotional theory, together focus primarily on the content of cognitions and the impact that distorted cognitions have on our emotional response and behavior. In the current study, using a single subject design with a baseline using a CPT / PE with music intervention targeting the maladaptive emotional regulation strategies associated with social environment. The data collection was conducted through a telecommunication session in a home-based setting. The single subject was a 40-year-old combat veteran female with ten years of service. The instrument used was the PCL-5 Scale for PTSD, which has a 5-point Likert scale focusing on the relation between four subscales; IDV Intrusive thoughts, Avoidance, Negative Cognition, Hyperarousal and DV the Decrease in PTSD symptomology with an increase in functioning. The research yields a positive association between a decrease in PTSD symptomology and increase in functioning, which would support the hypotheses of applying the techniques of Cognitive Processing Therapy in processing the distorted cognitive thoughts to a positive cognitive association of the present to decrease PTSD symptomology and a statistical significance of being an active participant in self-determination

SW-67

MSW-II, Autoethnography

Life's Journey, of a Military Brat Through Post War Experience into Community Reintegration

Ivette J. Rains

Research Mentor: Shinaz Jindani

Before joining the military, I have lived in varies places in part to my father serving in the army. My first exposure to social injustice at the age of seven while living in Europe. With my encounters of each deployment and processing the impact of war expanded my perspective on the different roles of clinical services and the ways to treat patients struggling with depression or posttraumatic stress disorder, after experiencing a traumatic life event. Through this,

I identified the need to become a clinical social worker. As in Bandura's social cognitive theory which focuses on our negative thoughts about a situation or environment affect how we feel and act. Along with Lang's information processing theory of PTSD or also known as emotion processing theory; which suggests that when the development of a memory fear network linked to traumatic events is activated it will produce avoidance PTSD symptom in the effort to avoid the intrusive symptoms. The collaboration of these two theories together focuses primarily on the content of cognition and the impact that distorted cognitions have on our emotional response and behavior. I believe the military core values and the social work code of ethics have similarities of professional standards such as dignity and worth of the person and social justice has established my practice model while at Savannah State University. My practice model is to provide empowerment in the effort of making a positive difference in the lives of civilians and veterans in promoting the realization of their potential for recovery.

SW-68
MSW I, Generalist

Borderline Personality Disorder and the Frequency of Social Media Use

Rebecca Rasnake

Research Mentor: Dr. Shinaz G. Jindani

The term 'borderline personality' was proposed in the United States by Adolph Stern in 1938 to describe a group of patients who 'fit frankly neither into the psychotic nor into the psychoneurotic group' (National Collaborating Centre for Mental Health, 2009). Symptoms include drastic fluctuations from periods of confidence to times of absolute despair, markedly unstable self-image, rapid changes in mood, with fears of abandonment and rejection, and a strong tendency towards suicidal thinking and self-harm (NCCMH, 2009). Social media platforms provide an arena where users can obtain instant gratification and personal validation in the form of likes, shares, and comments- interactions that counteract the state of Borderline Personality

markers as outlined in the DSM IV. By identifying the presence of these markers, a relationship will be proven between the number of markers and social media utilization. If an individual presents five or more diagnostic criteria, user frequency of social media platforms will be noticeably higher than those individuals with less than five markers. To gather data to conduct this research, voluntary participants 18 years of age or over will be given access to a link on various social media platforms. The link will redirect participants to a questionnaire consisting of 20 questions that will measure two concepts on a Likert Scale: borderline personality markers and frequency/content of social media posting. The data will be analyzed to determine the relationship between the two concepts.

SW-69
MSWK 1, Policy and Practice

No Child Left Behind

Rebecca Rasnake

Research Mentor: Professor Evelyn Dennard

The No Child Left Behind Act (NCLB), signed into law by President George W. Bush in 2002, was an update to its predecessor, the Elementary and Secondary Education Act of 1965. The intention of NCLB was to democratize a competent public education experience and ameliorate gaps in educational opportunity and student achievement, with regard for special, minority, and low socioeconomic groups. The result was misinterpretation of the policy at state and district levels, ambitious standards with lackluster funding, and a strong federal presence at a local educational level. By 2010, it was evident NCLB was ineffectual and in need of reformation. Efforts were made during the Obama Administration to improve the policy through a series of waivers that, if approved, offered states the autonomy and the flexibility to develop more practical standards for themselves. This framework guided educational legislation in a new direction, and in 2015, Every Student Succeeds Act (ESSA) was signed by President Obama, ending the reign of NCLB. Educational authority was shifted away from the federal

government and delegated back to the states upon enactment. This brief will examine the benefits and disadvantages of NCLB, navigating the key concepts of accountability, choice, funding, and educational methods that were designed to restructure and progress the public education system of the United States. Using statistical data extracted from various sources, a synopsis of the implementation, effectiveness, reformation, and replacement of NCLB will be presented.

SW-70

MSW II, Evidence Informed

Cognitive Behavior and Integrative Therapies on Anxiety

Keeli Rigdon

Research Mentor: Dr. Shinaz G. Jindani

It is not unusual to see anxiety as a central symptom of psychosis (Kiran & Chaudhury, 2016). The single subject client for this research was a 24-year-old female who displayed anxious and aggressive behaviors along with hallucinations. Medication regimen was prescribed (X_1) and 5 measures were taken using Zung Self Anxiety Scale (SAS). The client did show some progress. After the fifth day, Cognitive Behavior Therapy (X_2) was added ($n=6$), since the research has consistently shown that Cognitive Behavioral Therapy (CBT) is the most effective treatment strategy for treating a variety of conditions, including anxiety disorders (Holas, Suszek, Szaniawska, & Kokoszka, 2016). In order to sustain the impact of CBT long term, on the twelfth day, Integrative therapy (such as art, music, and yoga) was added (X_2) (McPherson & McGraw, 2013). The data was tested for autocorrelation. The data in the X_1 phase was transformed to remove the trend. Transformed data was used for the analysis. In X_1 , the client did seem to make some progress, but it was not a sufficient indicator of client's discharge. The data was tested for autocorrelation. The trend was detected in X_1 and therefore only for X_2 the transformed data was used for the analysis. Proportion frequency was applied which noted significant differences in the scores between the X_1 (Medication) and X_2 (Medication + CBT)

($p=0.00$). Further between X_2 (Medication+ CBT) and X_3 (Medication+ CBT+IntegrativeT) the Proportion Frequency noted significant difference as well ($p=0.00$). Overall, the effect size noted 48% change in scores in the desired direction. Using the data to inform my practice and designing the stepwise intervention to improve client outcomes has contributed to my own sense of self efficacy.

SW-71

MSWII, Autoethonography

Meaning Making to Establish and Practice Unconditional Positive Regard

Keeli Rigdon

Research Mentor: Dr. Shinaz G. Jindani

Even though I was raised in a formal religion, the experience of being bullied as a child made a lasting imprint that is active and lives within me even today. Given this, my trajectory of gaining self-esteem and being valued by others, and the process of meaning making from the religious teaching has brought me in full circle as I complete the MSW program. As I move forward in my career, I am convinced that there are various perspectives within my environment. I understand diversity is always a given context, within which individuals with mental health challenges are also included. At first, using unconditional positive regard, purported by Carl Rogers, did not come easy to me. Through social work internships, I am now liberated to practice this freely in the form of strengths perspective and see goodness in my clients, despite the mental health diagnosis. Practicing this perspective is my very own sense of strength, which allows me to extend and go beyond to find resources for which clients can facilitate coping. I can comfortably work with victims and bullies alike, knowing that I impact each client differently. Given this, I now consider myself a lifelong learner and continue to grow as the profession of social work evolves through my life cycle. My profession has much work to do as it spreads compassion, attempting to achieve peace worldwide, which are both rooted in my own values of unconditional positive regard.

SW-72
MSW II, Evidence Informed

Using Client-Centered Theory and Social Skills Training (SST) to Increase Peer Interaction

James Robinson

Research Mentor: Dr. Shinaz G. Jindani

The purpose of this study is to increase the peer interaction and socialization of an individual with Autism Spectrum Disorder. The theory that was used in this research was the client centered theory. Along with the client centered theory, evidence-based interventions were implemented to aid in increasing the peer interaction and socialization. The client is a 15-year-old student with Autism Spectrum Disorder. With this developmental disability the individual is very intelligent but is lacking the ability to interact with others. Theories of Carl Rogers are widely used in Social Work to impact the client outcomes. The client centered therapy was implemented to help the 15-year-old client who was diagnosed with Autism Spectrum Disorder. Additionally, Social Skills Training and Socratic Dialogue was used to impact the client's interaction skills especially with peers. The data as compared between all three phases. Phase I implemented social skills training, phase II implemented Socratic Dialogue and phase III implemented role play. T-test detected no significant difference ($p=0.30$) between phase I average (64) and phase II average (61.50), and phase II average (61.50) and phase III average (59.83). Delta noted 42% Decrease in undesired direction. Even though the client did not show progress, through this project I learnt to measure client progress and arrive at my own sense of practice effectiveness.

SW-73
MSWII, Autoethnography

Master Degree is not Enough: Psy. D is a Must

James Robinson

Research Mentor: Dr. Shinaz G. Jindani

During my teen years, I had become more materialistic like any other teenager. I and my peers compared what we had and what we did not. As this was becoming more important I got exposed to an oppressed and isolated community as I worked for YMCA. This was initially shocking, but also eye opening, as I could not wrap my mind around the gravity of life challenges faced by these residents. This propelled me to seek BSW and MSW degrees. Through this endeavor I got exposed to a residential academy and school social work, both focusing on children and teens. Irrespective of the setting, population or a problem, I have witnessed systems theory in action. To my bias, it is the organization of the network of systems that creates un-abling or enabling environment. Depending on the un-able-ing or enabling the individuals, families and communities can either thrive or struggle through survival. Besides if the systems are fraught with limited resources, conflict is obvious as it cannot meet the needs of its participants. Thus I would be advocating for the resources and at the same time helping those who experience mental health challenges. Even though my specialization in Clinical Social Work has given me the confidence to work independently, I prefer to enhance my competencies and a Psy. D in Clinical Psychology. This would give me liberty to develop my own work rules and practice privately in low-income areas.

SW-74

MSW II, Evidence Informed

The Effectiveness of Group Therapy and Medication in Acute Care

Jaleesa Sauls

Research Mentor: Dr. Shinaz G. Jindani

This single-subject research project was designed to measure the effectiveness of medication and group psychotherapy on a suicidal client. The client was admitted to Coastal Behavioral Health for stabilization following a suicide attempt. At the time of this study, the client had been admitted for six days. The hypothesis for this study was that the combination of antidepressants and daily group psychotherapy could decrease levels of stress, anxiety, and depression. Using the Autocorrelation Method, $p = 0.453$ for depression and $p = 0.583$ for stress, which show that the data is insignificant. The researcher believes that the inability to obtain scores from the client during initial intake and admission contributed to these scores.

SW-75

MSW I, Generalist

Alcohol Usage and Intimate Partner Violence

Bernadette Varnedoe

Research Mentor: Shinaz Jindani

Frequent heavy drinking can create an unhappy, stressful partnership that increases the risk of conflict and violence. There is some evidence that alcohol use increases the occurrence and severity of domestic violence. Additionally, alcohol ingestion has been argued as a direct, but not exclusive cause of intimate partner violence, not accounting for other factors such as low socio-economic status and/or impulsive personality (World Organization, 2006). This research explores the association between the Use of Alcohol and Intimate Partner Violence. The participants who have experienced intimate partner violence will be administered an informed

consent. After consenting a structured interview will be conducted that has 10 items on the use of alcohol and 10 items measuring intimate partner violence, which were modified and adapted from Walmyrs Scales. Reliability analysis will be conducted. Non parametric statistics will be applied to test the hypothesis if higher levels of alcohol use are associated with intimate partner violence intensity. Social Work implications will be discussed.

SW-76

MSWK 1, Policy and Practice

Juvenile Justice & Delinquency Prevention Act, 2018

Bernadette Varnedoe

Research Mentor: Professor Evelyn Dennard

The U.S. has no national, centralized juvenile justice system. Instead, there are over fifty-six different juvenile justice systems independently operated by the U.S. states, territories, the District of Columbia, and local governments (Juvenile Crime, Juvenile Justice, 2001). Therefore, policies and procedures differ from state to state and among local jurisdictions, creating a patchwork quilt of juvenile justice systems causing unpredictable consequences for youth, families, and communities. In effort to eliminate the inconsistencies and improve outcomes for youth and community safety, Congress passed the Juvenile Justice Delinquency Prevention Act (JJDPa) in 1974 and last reauthorized in 2002 (What is JJDPa? n.d.). According to American Bar (2018), its reauthorization is currently more than seven years overdue and last major reauthorization was nearly two decades ago. Despite “juvenile crime rates in United States being at its low levels and stable, youth in America -- including youth charged with non-criminal misbehavior -- are processed in the criminal justice systems, locked-up and imprisoned at much higher rates than in other comparable nations” (Juvenile Justice & Delinquency Prevention Act, 2018). Unfortunately, youth of color are significantly over-represented at all ages of the juvenile justice

system (Juvenile Justice & Delinquency Prevention Act, 2018).

SW-77

MSW I, Generalist

Seeking Pathway to Livelihoods: Entrepreneurship through Higher Education & Social Media Engagement

Ocheona Waller

Research Mentor: Dr. Shinaz G. Jindani

Since social media is continuously expanding, more and more people are using it as a way to promote their businesses or even themselves. Social media gives you the opportunity to create a platform for people to be seen and heard of from any part of the world by simply connecting through the click of a button. Will this deter individuals from seeking or completing higher education? This project explores the relationship between the entrepreneurial opportunities available through social media and views about seeking or completing higher education. This research uses self-created 20 items along with demographic questions. The data will be collected using Google docs. Only those who are above 18 and older will be requested to respond. Informed consent will be offered. Only after consenting they will answer the questionnaire. No financial remuneration or reward will be offered. Reliability analysis will be conducted. Findings will discuss implications for higher education.

SW-78

MSW II, Evidence Informed

Minimizing Anxiety, Depression and Stress with the Use of Dialectical Behavior Therapy

Latrell White

Research Mentor: Dr. Shinaz G. Jindani

The Purpose of this study was to determine the measurable effects of Individuals counseling, self- assessment, gym/exercise, and 4-7-8 breathing relaxation. The single subject client

was a 46-year-old Caucasian male diagnosed with Anxiety and Depression. Using cognitive-behavioral Theory approach, Strengths Perspective and Task-Centered was applied to the therapeutic process. Breaking down task into smaller portions, the client was able to demonstrate effectiveness by completing task and minimizing anxiety. The data was collected data twice per week, that included 7 Items on Depression, 7 Items on Anxiety, 7 Items on Stress and 21 Items on Symptoms of Anxiety. Delta and D Index noted changes ranging from 12% -26% in the desired direction. The medication gave significant relief to the severity of the client's symptoms, individual counseling created a safe space for client to vent and address his issues, DBT provider a deeper insight, group therapy empowered and decreased his depression. Breathing techniques reduced his anxiety & stress to gain control over his behaviors.

SW-79

MSWII, Autoethonography

Using Holistic Perspective: Person and Environment

Latrell White

Research Mentor: Dr. Shinaz G. Jindani

Living in impoverished neighborhood I was exposed to people from all walks of life. Religious people, normal people, drug dealers, drug users, murders, child molesters, and killers just to name a few. I witnessed mother make all attempts to teach good values to their children, with no avail. These children did get involved in drugs and guns. Through my own inquisitive mind, as a child, I wondered if these children used their intellect. As I entered teenage, I realized that it is not those children; it was the context that prompted bad choices. This makes me today a holistic social worker with my primary focus on the environment that could be more affirming of life and accepting of diversity. I do believe that the environment does play a key role at the same time the individuals also need to learn to make good choices. The intellectual capacities must expand through the life such that it can produce

contributing members in our society. Ecological theory proposed by Urie Bronfenbrenner states how the inherent qualities of a child and his environment interact to influence how he will grow and develop as person. I therefore will approach my practice as two prong approach. While I will foster enabling environment I will also work with individuals that will grow as healthy adults. Initially I choose nursing as a profession. This did not let me connect with my patients. I had become technical in my approach and was using one size fits all approach. Social Work demands that I individualize each client and customize my social work approach to address unique individual needs. This is affirming me as I use my intellect and creativity to make a difference in other's lives.

SW-80
MSW I, Generalist

The Role of Critical Thinking in Using Instagram and Practicing Risky Weight Loss Behavior

Stephen Williams

Research Mentor: Dr. Shinaz G. Jindani

There is no disagreement how Instagram can influence its participants with false messages and trap them to buy expensive weight loss products. Therefore, the role of Critical Thinking cannot be underestimated in practicing weight loss behaviors. Critical thinking suggests that the things are often very different from what they appear to be and that only the trained mind is prepared to see through the way things look to us on the surface (delusive appearances) to the way they really are beneath the surface (the deeper realities of life) (<https://www.criticalthinking.org/>). Using the Classical Conditioning Theoretical Framework of B. F. Skinner, this project assumes that the individuals who can think critically are less likely to become the victims of Instagram and practice risky weight loss behaviors. This research hypothesizes that the respondents who demonstrate lower levels of Critical Thinking Skills are more likely to Practice Risky Weight Loss Practices. The

questionnaire has self-created fifteen Instagram related items and nine weight loss related items. Using the sample of convenience, Instagram users will receive informed consent, after they consent they will be able to respond to the questionnaire. Students on campus will also be approached in informal setting such as cafeteria with a request to consider informed consent and answer the questionnaire. The data will be analyzed using IBM SPSS Statistics program.

SW-81
MSW I, Generalist

Assessing the Impact of Stress on Academic Performance of College Students

Tiffany Williams

Research Mentor: Dr. Shinaz G. Jindani

It is widely accepted that college students experience stress that directly impact their academic performance. This research explores the association between these two variables. One hundred students, male and female, attending a urban college will be administered this questionnaire in an informal settings such as parking lots, cafeteria and computer laboratories. After obtaining informed consent, all participants will be administered a questionnaire. According to Ross, Neibling and Heckert (1999), there are several explanations for increased stress levels in college students. First, students have to make significant adjustments to college life. Second, because of the pressure of studies, there is strain placed on interpersonal relationships. Third, housing arrangements and changes in lifestyle contribute to stress experienced by college students. Academic performance comprises of grade point averages, class assignments and meeting deadlines, class participation, and being punctual for classes. This research hypothesizes that the students who experience higher levels of stress will report lower academic performance. IBM Statistic SPSS will be used to analyze the data. Since this is a sample of convenience non-parametric statistics will be used. Recommendations and social work implications will be discussed.

SW-82

MSWK 1, Policy and Practice

McKinney-Vento Homeless Assistance Act

Tiffany Williams

Policy Mentor: Professor Evelyn Dennard

According to section 725(2) of the McKinney-Vento Homeless Assistance Act, the term “homeless in children and youths”— means individuals who lack a fixed, regular, and adequate nighttime residence...; and includes children and youths who are sharing the housing of other persons due to loss of housing, economic hardship, or a similar reason; are living in motels, hotels, trailer parks, or camping grounds due to the lack of alternative accommodations; are living in emergency or transitional shelters; are abandoned in hospitals; or are awaiting foster care placement. The McKinney-Vento Act has many objectives such as; each state educational agency shall ensure that each child of a homeless individual and each homeless youth have equal access to the same free, appropriate public education, including a public preschool education, as provided to other children and youths. The McKinney-Vento Homeless Assistance Act is an effective policy, but it has room for improvement. Recommendations for the policy would be to increase housing subsidies to provide permanent housing for children living in homeless families, and unaccompanied youth, increase funding for transitional and independent living programs for youth who are aging out of foster care, provide vocational training and employment services for unaccompanied youth to achieve economic self-sufficiency, provide nutritiously adequate food and nutrition outreach at shelters and other temporary housing, and provide educational services to facilitate high school completion for unaccompanied youth who dropped out of high school (NCCP, 2017). The purpose and the goal of the McKinney-Vento Homeless Assistance Act is to better the well-being of children who are homeless; to keep students show suffer from homelessness in school no matter their living arrangements or income.

SW-83

MSW I, Generalist

Child Neglect and Abuse Equals Low Hope

Corinthian Winton

Research Mentor: Dr. Shinaz G. Jindani

Previous studies have stated that children do well in their education and learning life skills when there are two parents in a household and/or when father is present. Studies comparing families that are raised by a single mother and single fathers are missing. This research explores the association between a family structure and the evidence of child abuse and neglect. The experience of abuse has life altering impact, that lasts beyond adulthood. It can impact adult intimate relationships, career success and successful parenting. Using the sample of convenience, the adult responders who are 18 and above will be offered informed consent. After consenting they will receive a questionnaire that has 24 items, using Likert Scale 1-4. This questionnaire inquires about the respondent’s parent’s marital status when they were a child, if divorced their own age at the time of divorce, their sole guardian, number of siblings and involvement of biological and step parents in their lives. Since this is a sample of convenience, non-parametric statistics will be used to study the relationship between family structure and childhood abuse and neglect experiences. Social Work implications will be discussed.

High School Students

HS-1

Mars Colony STEM/STEAM Project

Mario Misencik

Research Mentor: Ms. Veena Nadella

A hovercraft is a type of vehicle that glides over a smooth surface while "hovering" using a cushion of air. It is very versatile, as it can travel over both flat land and water. With the cushion of air being the way it stays aloft, how does the amount of air in the cushion affect how far it goes and how long it hovers? To launch this experiment, one will require a soda bottle cap, an old CD, a balloon, and some glue. Once the miniature hovercraft is created, then the balloon will be filled up with different levels of air, with a trial being run for each level to see how far it goes and how long it stays aloft. The results will be recorded and a conclusion can be drawn. After this, we can draw conclusions based on what level of air inside the cushion is necessary to create a high-quality, long-lasting hovercraft. This experiment, once it is completed, will impact the science world further by hopefully recreating the results on larger hovercrafts that can be useful in the real world. That way, we are creating hovercrafts that can withstand a long duration and eventually make a versatile vehicle even more high-quality.

HS-2

Mars Colony STEM/STEAM Project

Samuel Sanchez-Bermudez, Victoria Patel,

Research Mentor: Ms. Veena Nadella

Scientists have been studying the planet, Mars, for possible colonization. For any chance of success, there must be a thorough layout planning in which the colony will be constructed in. Mars has a different environment, so humans will have to adapt to the new living conditions that Mars will have such as: temperature, climate, oxygen, air pressure, gravity etc. Therefore, students and scientists will have to create a specific layout

considering the environment of this planet and the effects each decision would have on the colony.

Approach to Experiment

Within the experiment, scientists and students need to solve realistic issues that colonizing Mars would have. The whole layout would need to be carefully thought out and students would need to maximize the advantages of each solution. By working on this experiment, participants will use logistic, planning, creative, critical thinking, and architectural skills to come up with a developed civilization.

How this project impacts

This project is an engaging way of helping students and/or scientist learn about Mars. This project can be done independently or collaboratively to help participants learn in different ways. This project may also be helpful to scientists and architects who may actually work on this in real life; these are real ideas that can be taken into consideration to help benefit a future in Mars.

Conclusion

This project is an engaging way to help students and scientist learn about Mars. It requires participants to think about all of the possible concerns to the people living in the colonies for the best living conditions. The best colony would depend on its success with handling the different concerns, so students should be prepared for any situation based on information of Mars.

HS-3

Mars Colony STEM/STEAM Project

Victoria Patel, Samuel Sanchez,

Research Mentor: Ms. Veena Nadella

Scientists have been studying the planet, Mars, for possible colonization. For any chance of success, there must be a thorough layout planning in which the colony will be constructed in. Mars has a different environment, so humans will have to adapt to the new living conditions that Mars will have such as: temperature, climate, oxygen, air pressure, gravity etc. Therefore, students and scientists will have to create a specific layout considering the environment of this planet and the effects each decision would have on the

colony.

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HS-4

Difficulties in Learning Chemistry

Nigel Smith, Veena Nadella,

Research Mentor: Ms. Veena Nadella

Chemistry is taught in many forms throughout the world. However, no definitive method has been created to ensure that this teaching is effective. Countless examples exist of students simply not being able to connect with many chemistry materials. This poster theorizes that the use of a comprehensive survey can allow for the effective identification and further proliferation of effective education techniques. Through the use of a digital Google Forms survey, we expect to be able to pinpoint what issues students have with their studies, and what methods to focus on to mitigate this. By ensuring that these students can

express their grievances, the field as a whole can be pushed for the better. Local research collection like outlined in the project could be extremely informative, especially if such data became cumulative. The results of this survey would be a great stride to making effective education techniques in the coming years.

HS-5

Difficulties in Learning Chemistry

Nigels Smith

Research Mentor: Ms. Veena Nadella

In our modern world, countless new resources are devised to help the process on educating students about Chemistry. However, students still have difficulty in understanding and applying these concepts. At Savannah Early College, a new student driven initiative is being deployed to gauge what can be done to alleviate such difficulties. Through the use of school activism and digital data collection, we will be able to pinpoint what the weaknesses of our current teaching approach entails. This self-driven method has the potential to provide a much more effective and encouraging educational environment. The support of students and administrators for growth allows a unique and highly effective attitude to form about education, an attitude that is truly invaluable in its impact for growth.

HS-6

Mars Colony STEM/STEAM Project

Mario Misencik

Research Mentor: Ms. Veena Nadella

A hovercraft is a type of vehicle that glides over a smooth surface while "hovering" using a cushion of air. It is very versatile, as it can travel over both flat land and water. With the cushion of air being the way it stays aloft, how does the amount of air in the cushion affect how far it goes and how long it hovers? To launch this experiment, one will require a soda bottle cap, an old CD, a balloon, and some glue. Once the miniature hovercraft is created, then the balloon

will be filled up with different levels of air, with a trial being run for each level to see how far it goes and how long it stays aloft. The results will be recorded and a conclusion can be drawn. After this, we can draw conclusions based on what level of air inside the cushion is necessary to create a high-quality, long-lasting hovercraft. This experiment, once it is completed, will impact the science world further by hopefully recreating the results on larger hovercrafts that can be useful in the real world. That way, we are creating hovercrafts that can withstand a long duration and eventually make a versatile vehicle even more high-quality.

HS-7

Can we make cheaper, safer Biofuels?

Nigel Smith, Sue Ebanks

Research Mentor: Dr. Sue Ebanks

One of the world's largest sectors of Biofuel is Biodiesel, which has been made to create a renewable form of energy for Diesel engines. The process of creating Biodiesel, called Transesterification, is the chemical reaction in which the esters of alcohol and vegetable oil are transformed in order to make Diesel fuel. Normally, this process uses the harsh chemicals Sodium Hydroxide and Methanol, which limits what facilities can create the fuel. Along with this, growing crops just to make fuel is not as sustainable as other options have shown. This causes a prevention of low-income communities from being able to produce this fuel, and it is too hazardous for lower level work like my own. Through research, I designed a method to combine the experiments of past scientists in order to optimize a safe creation of Biodiesel. I used Ethanol to replace the toxic Methanol alcohol and used Magnesium Oxide to replace the Sodium Hydroxide catalyst. In addition, this was done a more economical and renewable oil source, waste vegetable oil. The only materials needed past these materials were a hot plate and frequent stirring. Through this, I found that it is possible to yield Biodiesel with non-hazardous materials and without needing advanced lab equipment, all for less than \$20. Using waste oil sources alongside these non-hazardous

chemicals, the safety and feasibility drastically rises, which poses a great future for Biofuels proliferation.

HS-8

The Creation of an Inclusive and Safe Biofuel Production Method

Nigel Smith, Sue Ebanks

Research Mentor: Dr. Sue Ebanks

This project focuses on innovating upon a process of making Biofuel. One of the world's largest sectors of Biofuel is Biodiesel, which has been made to create a renewable form of energy for Diesel engines. The process of creating Biodiesel, called Transesterification, is the chemical reaction in which the esters of alcohol and vegetable oil are transformed in order to make Diesel fuel. Normally, this process uses the harsh chemicals Sodium Hydroxide and Methanol, which limits what facilities can create the fuel. Along with this, growing crops just to make fuel is not as sustainable as other options have shown. This causes a prevention of low-income communities from being able to produce this fuel, and it is too hazardous for lower level research like my own. The vast majority of my time was then spent on research on what could be done to alleviate the issue of expense and safety. Through this, I designed a method to combine the experiments of past scientists in order to optimize a safe creation of Biodiesel. I used Ethanol to replace the toxic Methanol alcohol and used Magnesium Oxide to replace the Sodium Hydroxide catalyst. In addition, this was done a more economical and renewable oil source, waste vegetable oil. The only materials needed past these materials were a hot plate and frequent stirring. Through this, I found that it is possible to yield Biodiesel with non-hazardous materials and without needing advanced lab equipment, all for less than \$20. Due to this success, others and I could expand on the effectiveness to make it a complete rival to the hazardous chemicals that were once needed. Using waste oil sources alongside these non-hazardous chemicals, the safety and feasibility drastically rises, which poses a great future for Biofuels proliferation.

NOTES

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