

NINTH ANNUAL MALONE UNIVERSITY

STUDENT

RESEARCH SYMPOSIUM

A Celebration of Scholarship and Creative Expression

SATURDAY **2017** **APRIL 22**

10 A.M. - 12 NOON

East Campus Multipurpose Room

Malone University campus



MALONE UNIVERSITY
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NINTH ANNUAL MALONE UNIVERSITY

STUDENT

RESEARCH SYMPOSIUM

A Celebration of Scholarship and Creative Expression

SCHEDULED **PERFORMANCES**

10:45 a.m.

**Winners from the annual
Malone Writers Prize**

AWARDS PRESENTATION

11:50 a.m.

People's Choice Award
(vote by 11:30 a.m.)

TREE CAMPUS USA PRESENTATION

PROJECT **ABSTRACTS**

1. Dawn Gnes

Faculty Mentor: Claire Wilson

Congestive Heart Failure Burdens: The Impact of Stressors for Caregivers

Health care providers can be beneficial to the caregiver when the stressors of caregiving are properly identified, thus reducing burden and role strain. The purpose of this research was to identify patterns in perceived burden and stressors felt by the caregivers of congestive heart failure patients, finding commonalities in the role strain they may experience. The research was conducted with participant caregivers during the patients' hospitalization at a community hospital in Northeastern, Ohio. Thirty nine participants completed the Zarit Burden Interview (ZBI), which measures caregiver role strain by grouping clusters of questions into four domains of burden in the relationship, emotional well-being, social and family life, finances, and loss of control over one's life. Caregiver burden (mean scores) were compared with total hours in the caregiving role. Statistical analysis supported the idea that burden increased as the number of hours spent in the caregiving role increased. The goal of the research was to promote awareness and add information to healthcare's body of knowledge on perceived stressors for caregivers of congestive heart failure patients.

2. Holly Roddy, Lanie Melton

Faculty Mentor: Claire Wilson

Elevated Body Mass Index:

Shift Work and Sleep Quality of Critical Care and Critical Care Step-down Nurses

Background: Obesity affects over 78.6 million adults in the U.S. leading to chronic health conditions. Using Orem's Self-Care Deficit Nursing Theory framework, the association between shift work, sleep quality, and BMI in critical care and step-down nurses was explored.

Method: A cross-sectional study was conducted to evaluate the effects of shift work and sleep quality on BMI in critical care nurses. Questionnaires were used to collect demographic data and the Pittsburgh Quality of Sleep Index (PSQI) measured sleep quality. Included in the study were N=47 critical care and step-down nurses at a hospital in northeastern Ohio.

Results: 31.9% of the participants had a BMI of ≥ 30 . Nurses with an associate's degree had a significantly higher BMI than those with a Bachelor's, Master's, or Doctorate degrees. There was no statistically significant difference of elevated BMI between shifts. There was statistically significant difference between shift worked and PSQI sleep quality. Sleep quality decreased as BMI increased. There was a poor correlation between age and BMI.

3. Jamie Butler

Faculty Mentor: Kathleen Flaherty

*The Lived Experience of Emergency Department
Registered Nurses after Critical Incidents*

The purpose of this study was to explore the prevalence of secondary traumatic stress (STS) among emergency department registered nurses, and to evaluate the effects of structured debriefings on alleviating these symptoms, as well as, improving learning, safety, communication, and teamwork. A descriptive phenomenological design was used for this qualitative study. 8 emergency department registered nurses from Coshocton County Regional Medical Center were interviewed. Critical incidents were described by individual nurses as well as symptoms of STS. There were nurses who have been involved in debriefing sessions in the past. They discussed their views on debriefing sessions. In conclusion, secondary traumatic stress symptoms among emergency department registered nurses following critical incidents existed. Debriefing sessions were beneficial for those nurses who have had debriefing sessions in the past.

4. Melissa Rinehart

Faculty Mentor: Kathleen Flaherty

*The Effect of Parental Communication on Sexual Risk Taking
and Sexual Self-Efficacy in Adolescents*

The purpose of this research study was to explore whether or not the amount of parental communication an adolescent receives regarding sex affects their sexual risk taking and sexual self-efficacy. A convenience sample of freshman Christian college students (n=42) was used. Students completed an online questionnaire measuring parental communication, sexual risk taking, and sexual self-efficacy. It was predicted that students who reported increased parental communication regarding sex would have lower sexual risk taking and higher sexual self- efficacy scores. It was found that parental communication had no significant relationship with sexual risk taking or sexual self-efficacy. There was a significant relationship between parental communication and lower sexual risk taking among those students who reported being sexually active ($r^2=.2809$, Sig F=.0196). These findings were inconsistent with recent research with larger sample size (Parkes, Henderson, Wright, & Nixon, 2011). Further research should be done with larger, more diverse samples to build the literature base on the topic.

5. Christina Adams, Susan Billetter

Faculty Mentor: Kathleen Flaherty

The Effects of Sleep Deficiency and Fatigue on Perceived Self-Efficacy of the Bedside Registered Nurse

RNs create a quiet environment for patients to promote sleep and healing, but often compromise their personal need for restful recovery. Research indicates that fatigued and sleep deficient RNs can suffer from decreased cognitive ability, altered critical thinking skills, and faulty decision-making that may affect patient outcomes. This study explored factors associated with sleep deficiency, fatigue and perceived self-efficacy in RNs working in an acute care setting. Fifty bedside RNs completed three surveys measuring sleep quality, fatigue, and self-efficacy in this descriptive correlational study. Analysis of the relationships between sleep deficiency, fatigue, and perceived self-efficacy is ongoing. Understanding the effects of sleep deficiency and fatigue on perceived self-efficacy may help to determine additional interventions to improve patient safety.

6. Gabrielle Dickerhoof, Brittany McClain

Faculty Mentor: Kathleen Flaherty

Mutuality between Caregivers and Persons with Dementia

Caring and love are universal and mysterious forces that encompass the relationship between two people (Watson, 2008). A caring, loving relationship is a fundamental aspect to mutuality. Mutuality is the positive quality of a relationship that reflects love and affection, shared pleasurable activities, shared values, and reciprocity (Archbold et al., 1990). Mutuality was examined among healthcare providers, family caregivers, and persons with dementia (N= 40). Within each population, the presence of dementia had a negative correlation to the existence of mutuality ($p < 0.05$). Presence of dementia had a significant effect on the caregiver's perceived mutuality by ANOVA analysis among the four subscales: love and affection ($F=3.78, p < 0.05$), shared pleasurable activities ($F=4.86, p < 0.01$), shared values ($F=4.74, p < 0.05$), and reciprocity ($F=18.8, p < 0.01$). Future research regarding interventions to increase mutuality between caregivers and persons with dementia could enhance the degree of mutuality.

7. Karen Jurica, Susan Reynolds

Faculty Mentor: Kathleen Flaherty

Registered Nurses and Health Promotion in the Emergency Department

Care in the ED is problem focused which other studies have suggested results in missed opportunities to promote health to people that have no other source of care. The purpose of this study is to explore the relationship between the personal health promotion characteristics, using the HPLP-II, and the professional health promotion activities, using the select subscales of the PMAAQ, of ED RNs (n=74) in 2 northeast Ohio hospital systems. Descriptive & correlational statistical analyses of the responses were completed using SPSS software. Scores on the Spiritual growth, Interpersonal relations, & Stress management subscales showed the strongest correlations with overall personal Health promotion & Health responsibility. Higher scores on the health responsibility subscale were positively associated with greater ED nursing experience, increased endorsement of interventions aimed at smoking cessation & hypertension management, increased perception of counseling efficacy, & increased acknowledgement of the importance of ED RNs to counsel patients about health promoting behaviors.

8. Julie Reese

Faculty Mentor: Kathleen Flaherty

Registered Nurse Perceptions of Patient and Family Member Perpetrated Verbal Abuse

Verbal abuse is a common occurrence in today's healthcare system. Healthcare is driven from a "customer is always right" frame of reference, causing registered nurses (RNs) to accept verbal abuse as part of the job. This leads to many negative personal and professional consequences. This study explored perceived verbal abuse directed at RNs in a northeast Ohio acute care hospital. Sixty-nine RNs completed a modified version of the Verbal Abuse Questionnaire. Frequency and statistically significant instances of verbal abuse against RNs and associated consequences were found. It was found that RNs most frequently perceive verbal abuse from patients and family members ($p = 0.05$). Increased stress levels, decreased job morale, and decreased sense of relaxation/well-being in the job setting were the most perceived consequences. Based on the findings of this project, future interventional research about RN coping mechanisms and conflict resolution may contribute to job satisfaction and the promotion of emotional and physical well-being.

9. Antonio Scassa

Faculty Mentor: Lora Wyss

Parent-Provider Trust: Traits That Could Lead to Building a Trusting Relationship

This study examined the attributes that led to a trusting relationship between parents and their child's provider. The research sought to identify what traits played into a trusting relationship between parents and the health care providers. Semi-structured interviews were conducted with parents who felt they had trusting relationships with the providers that vaccinated their children. Children of the parents had to be age five or younger to qualify. The major theme of communication between parents and providers was important in building trust along with the sub themes of time, support of the providers and the connection to patients and families. This study discovered that open communication between a health care provider and parent could lead to a more trusting relationship. This study can help health care providers understand some of the factors that can lead to building trust with their patients and the patient's family.

10. Dawn White

Faculty Mentor: Lora Wyss

The Analysis of a Collaborative Initiative to Promote Healthy Lifestyles in Adolescents

Obesity affects over 78 million adults in the United States (CDC, 2012). Many health risks are linked to obesity including cancer, hypertension, heart disease, stroke, and diabetes. The financial impact of obesity is seen in billions spent annually just in heart disease and diabetes treatment.

A questionnaire was used to gather data about activity and lifestyle preferences of adolescents and body mass index (BMI) measurements were taken each year. The data was collected for high school adolescents over a four year period. The students received a variety of education regarding diet, exercise, nutrition, and sedentary behaviors. The BMI data obtained was analyzed for statistical results and compared to the 2013 control group to determine if a BMI reduction was realized among the experimental group (class of 2017). Although there were no reductions in BMI, results indicate that educational interventions resulted in changes to diet and exercise habits.

11. Stephanie Adams

Faculty Mentor: Robin Adams-Weber

Adaptation of Perceived Stress:

The Effects of Holistic Interventions on Stress in Nursing

Nursing majors have historically experienced higher student stress when compared to other declared majors primarily due to the unique requirements of lab skills, hospital clinical time, and preparation for the National Council Licensure Examination-Registered Nurse (NCLEX-RN). The main goal of this study was to contribute information to the nursing community about complementary and alternative interventions that could help to reduce nursing student stress. The research question was "in nursing students, does holistic interventions, as compared to those with no holistic intervention, have a reduction in stress over a five-week period?". The study examined the effects of five different weekly interventions of holistic nature such as aromatherapy, meditation, stress balls, mindfulness, and music therapy. The study is of quantitative and qualitative nature with the Perceived Stress Scale used as a pre-test and post-test questionnaire in addition to open-ended questions. After the interventions, it was found that the results were statistically significant and that holistic interventions did help to reduce the majority of nursing students perceived stress levels.

12. Wendy Pribanich

Faculty Mentor: Rosanna Hess

Cardiac Telemetry Nurses' Knowledge

of Heart Failure Self-Management Principles

Purpose: To determine cardiac telemetry nurses' knowledge of heart failure self-management principles before and after participation in an educational intervention; **Methods:** A quasi-experimental one-group pretest-posttest design; convenience sample; a 20-item true or false survey, Nurses' Knowledge of Heart Failure Education Principles Survey, administered before and after a five-minute educational video on heart failure self-management principles. **Results:** 24 nurses participated; pretest 77.3% , posttest 79.3%; years as a nurse was significantly correlated with the pretest mean score (Pearson $r = .496$; $p = .016$); Answered correctly were statements on taking medications properly, drinking fluids, feeling short of breath, and diet. Answered incorrectly were signs and symptoms of low blood pressure, dizziness, and potassium-based salt substitutes. **Conclusion:** Nurses with more years of nursing experience had a better level of knowledge of heart failure self-care principles. Focused continuing education should help improve nurses' knowledge level.

13. Gina Sumpter

Faculty Mentor: Rosanna Hess

*Predictors of Medication Adherence among
Community Dwelling Older Adults in NE Ohio*

Purpose:To identify predictors of medication non-adherence among community dwelling older adults managing their home medications. **Methods:** A non-experimental approach with a descriptive correlational design, utilizing the Short Assessment of Health Literacy (SAHL), Mini-Cog, Morisky Medication Adherence Scale, and demographic variables, to survey adults over 65 years of age at two senior centers in Northeast Ohio. **Results:** Of 42 participants, mean age 76, cognitive status, number of co-morbidities, and education level were statistically significant predictors of medication adherence. Health literacy level was not a predictor of medication adherence. **Conclusion:**The results indicate that higher education is associated with lower adherence, more co-morbidities result in lower adherence, and higher cognitive status is associated with higher adherence. Future studies should include a larger sample size identifying other predictors of medication adherence in this population.

14. Olivia Wyckoff, Kurt Moore

Faculty Mentor: Stephanie Burgess

Adolescent BMIs Related to Breakfast Consumption

This study investigates the correlation between adolescent body mass index (BMI) and breakfast consumption. Our study is adapted from the CDC's health behavior survey to investigate adolescent risk behavior. Our research is guided by the Health Promotion Model, specifically exploring the problem of obesity. This is a significant area for research due to health issues associated with obesity. Through random sampling, we administered 295 anonymous surveys to students attending a Northeast Ohio High School during lunch periods. Of the distributed surveys, 289 were used in our study. The surveys were voluntary and self-reported, containing questions about what the student typically eats for breakfast throughout the week. We expect the BMI to be higher in students who do not consume breakfast than those who regularly consume breakfast. Data analysis was done using Microsoft Excel.

15. Daphney Miller

Faculty Mentor: Stephanie Burgess

*The Exploration of Adolescent Sleep Patterns
and Associated Health-Related Outcomes*

The aims of the study were to explore sleep patterns among adolescents and possible associations with health-related outcomes, such as BMI and body weight. Relationships between sleep patterns, electronic device use, caffeine intake, daytime sleepiness and BMI were examined. A descriptive correlation study design was used. Information was collected by way of a self-report survey of forty-four, 9-12th grade students in Northeastern Ohio. The Cleveland Adolescent Sleepiness Questionnaire was utilized to evaluate sleepiness. A Modified 2015 CDC's Youth Risk Behavior Survey (YRBS) was utilized to evaluate caffeine use, hours of sleep obtained, and electronic device use. Analysis will be completed using Microsoft Excel. Identifying features affecting health-related consequences in adolescents, including sleep patterns, electronic device use, caffeine intake, daytime sleepiness, and BMI, assist with establishment of health promotion and awareness through education. Change can improve health and health outcomes of generations of the future. This study was approved by the Malone University IRB committee and the Aultman Ambassador Program.

16. Mary Tilton

Faculty Mentor: Stephanie Burgess

Nursing Knowledge of Electronic Discharge Planning

Purpose: To measure the nursing knowledge of nurse informatics and discharge plan accuracy and completeness.

Methods: The design of the study was twofold. The first part of the design was a pilot study that included a random sample of Southeastern Ohio Registered Nurses. A 24 item self-report survey was distributed to 12,240 registered nurses by Survey Monkey which included a total of 18 yes/no questions, 2 open end questions, and 4 Likert scale questions. The survey had 651 responses. The second part of the study included a retrospective electronic chart review at two Southeastern Ohio hospitals and each had a different version of electronic discharge charting. The data was analyzed using Excel 2010 and pivot tables for data summation. The measures of central tendency used were mean, median, and mode.

Results: The researcher is expecting that nurses perceive electronic discharge planning as complex. The researcher is interested in knowing if the age and computer experience have an impact on the nurses perception. The researcher will use the retrospective electronic chart review to endorse the results of the self-report survey.

**17. Audrey Miller, Hannah Kirkpatrick, Stacy Butcher, Katie Barker
Faculty Mentor: Stephanie Burgess**

Food Choices and BMI among High Schoolers

The researchers conducted a survey investigation of health behaviors in collaboration with the Aultman Ambassador Program to investigate fast food consumption, in comparison to “healthy” food. Obesity beginning in adolescents is a growing concern worldwide. The sample consisted of adolescents. One local high school participated in a self-report survey. Students grades 9 through 12 were selected to anonymously complete a survey that asked various questions on a Likert scale response, dichotomous, and short answer format. Age, gender, and BMI score were all measured and taken into consideration throughout the research process. Questions regarding personal view of weight, and what the individual was doing about their weight were asked. Students were also asked how often soda was consumed, how often fast-food was consumed, and general questions about food choices, meal preparation, and consumption of foods high in sugar. Results from the surveys were logged in an excel spreadsheet, and have undergone complete analysis and evaluation.

**18. Brittany Brugger, Cassidy Kurtz, LaTashia Neal, Andrew Monea
Faculty Mentor: Stephanie Burgess**

Does Fruit and Vegetable Intake Among Adolescents Influence Their BMIs?

This research study was conducted to determine how fruit and vegetable intake among adolescents influences their BMIs. Data was collected from a sample of 9th-12th grade adolescents who attend a high school in Northeastern Ohio. Ordinal and nominal data were collected using multiple choice and fill-in-the-blank survey questions. 295 surveys were gathered, and out of these 6 surveys were eliminated due to ambiguous data, with a total of 289 surveys being analyzed. Due to previous research studies the researchers suspect that quantitative data will reveal that an adequate daily amount of fruit and vegetable intake will lead to a healthy BMI and a diet low in fruit and vegetable intake will correlate with high BMIs. Identification of the possible correlation between these two factors is crucial to developing strategies to improve healthy nutrition, and subsequent overall health in adolescents.

**19. Cody Gerber, Grant Peters, Savannah Reed, Abigail Suplee,
Theodore Pavliantos**
Faculty Mentor: Stephanie Burgess

Physical Exercise and BMI: What Influences Your Choices to Exercise?

High school is a time when students grow immensely, not only academically, but also physically. Exercise can help students keep in shape and maintain a healthy body mass index (BMI). Our theoretical concept is that by asking the students about their exercise habits and comparing them with BMI, we can see that more exercise leads to a healthier BMI. A survey was used to compare high school boys' and girls' BMIs with the number of hours they are physically active, the number of hours they spend watching television, the number of hours they spend playing video games, and how health conscious they are about their weight. In theory the students who are in more sports and spend more time being physically active should have a strong negative correlation when compared with their BMIs. Also students who spend more time playing video games or are not as physically active should have an increase in their BMIs. Microsoft Excel is being used for analysis. Our results are in progress. Healthy exercise habits are important for high school students so they can carry them into adulthood.

20. Jennifer Untch, Jacob Reed, Emily Sommers, Erika Rector
Faculty Mentor: Stephanie Burgess

*Sugar Sweetened Beverage Consumption among Adolescents
in Relation to Their BMI and Obesity Status*

According to research, consumption of sugar-sweetened beverages (SSBs) has increased steadily during the last few decades, especially among adolescents. The researchers' purpose for this study was to analyze SSB consumption habits among Northeast Ohio high school students in relation to their BMI and obesity status. The sample consisted of local high school students, grades 9 through 12. The research data was collected in the form of a self-report survey. Each survey consisted of various questions covering a variety of topics relating to certain health behaviors such as how often and where adolescents consume the majority of their SSB. The survey also included self-reporting height and weight measurements to calculate BMI, ordinal questions concerning the amount of sugary beverages consumed, and nominal inquiries into the attitudes and health behaviors associated with SSB consumption. Results from the surveys were recorded into a Microsoft excel spreadsheet and have undergone complete analysis and evaluation.

21. Bethany Burton, Chrissy Cameron, Anna Jaimes, Sarah Miller
Faculty Mentor: Stephanie Burgess

The Effects of Health and Fitness Applications on BMI

The goal of this study was to assess whether the use of mobile health applications could be utilized as an intervention in combating obesity among adolescents. The research was done in association with the Aultman Ambassador Program and consisted of a correlational study design that included a self-survey of 295 high school adolescents. Descriptive statistical tests were used to illustrate the relationships among the variables of BMI and hours spent watching TV and playing video games as well as the number of health applications used. The results showed that there was a moderate relationship between obese adolescents and the daily hours spent playing video games. There was also a weak relationship between BMI and hours spent watching TV as well as a weak relationship between BMI and the number of health/fitness applications used. However, 61% of the participants stated that they did not use any health applications. Therefore, further research is needed to conclude if health applications are an appropriate intervention for helping to reduce obesity among adolescents.

22. Amy Force, Sarah Brent, Amanda Beam, Kristi Schrock,
Savanna Dukich
Faculty Mentor: Stephanie Burgess

Sleep and BMI in Adolescents

Obesity is a growing problem among the younger population in today's society. The aim of this study was to examine if there is a relationship between the amount of sleep adolescents receive and their BMI. Previous studies have supported this hypothesis and shown that adolescents need at least 8.5 hours of sleep per night. Data collection was conducted at a local Northeastern Ohio high school with the sample population being adolescents 12 to 18 years of age. 288 students participated in the 31 question survey. The results were then analyzed using Microsoft Excel, looking for correlations and to compile measures of central tendency. Findings showed a correlation between fewer hours of sleep and increased BMI's for the sampled population. These findings can be generalized to the adolescent population. These results support the need to combat obesity related sleep patterns in adolescents by educating healthcare professionals and adolescents on the importance of sleep for healthy living.

23. Mary Hankton

Faculty Mentor: Elizabeth Patterson Roe

*A Secondary Analysis of ASIA Inc.'s International
Community Empowerment Project in Akron, Ohio*

Asian Services in Action Inc. is an agency in Akron that works closely with the Asian American community. This study is an analysis of data collected from students in ASIA Inc.'s after-school ICEP program. ICEP stands for International Community Empowerment Project. It is an Alcohol and Drug (AOD) prevention program that works with refugee and immigrant youth in Akron Public schools. The survey was designed to seek to understand how participants felt about school and their futures. The students are in middle school and high school. The results of this study were used to develop future program interventions for ASIA Inc.'s afterschool ICEP program.

24. Haley Richardson

Faculty Mentor: Elizabeth Patterson Roe

Domestic Violence and Social Media Harassment

Intimate partner domestic violence cases are one of the most common types of cases to come through the Stark County Prosecutor's office. Even with advocates, attorneys, social workers and witnesses all working together to protect the victim, the reason or means of abuse and harassment sometimes get lost. This research explores the prevalence of social media harassment in intimate partner domestic violence cases. Closed cases from October 2016 to February 2017 were analyzed to look for the occurrence of social media harassment. The review included police reports, victim impact statements, and witness reports. Results will reveal the occurrence of social media harassment. This study will assist the Stark County Prosecutor's office by allowing victims to open up about the harassment they may have experienced as well as informing the office about the rates of this type of harassment.

25. Rebecca Kolb

Faculty Mentor: Elizabeth Patterson Roe and Karen Slovak

Work-Related Stress among Nursing Home Staff

Hennis Care Centre is a nursing home and rehabilitation facility in Dover, OH. This research seeks to discover both the stress levels of staff and their coping mechanisms for stress. The participants in this study are those who interact with the clients/residents of the care center on a day to day basis.

This convenience survey will be given to staff members in all areas of the center, including but not limited to social services, nursing, physical therapy, finances, nutrition, housekeeping, and unit management. The results will compare varying levels of stress among the differing jobs at Hennis Care Centre. This research study will provide the researcher and the social services office at Hennis with data about the varying levels of stress among the staff members, and what causes the most stress among the employees.

26. Natalie Hornick

Faculty Mentor: Elizabeth Patterson Roe

Hispanic Outreach Project

The Hispanic population in Canton numbers around 80,000 and is continuing to grow. The purpose of this study is to find out how The Salvation Army can grow in order to better serve the Spanish speaking population. This research study uses an anonymous survey aimed at assessing the specific needs of the local Hispanic population. The goal of this study is to discover barriers the Hispanic population is facing that are preventing them from accessing services. Results of the study will be presented with the goal of discovering how the Salvation Army can eliminate barriers and expand their services to address the needs of the local Hispanic population.

27. Deanna Maggio

Faculty Mentor: Elizabeth Patterson Roe and Jane Hoyt-Oliver

What are the Benefits of Support Groups to Foster Parents?

Bair Foundation, a faith-based foster care agency, desires to support their foster parents as well as possible. The research conducted utilizes a survey to discover how foster parents feel about participating in a support group. This information allows The Bair Foundation to understand the desires of their foster parents. The potential benefits to the participants are the opportunity to belong to a support group relevant to their needs and interests. This support group would be geared to aid them emotionally and give them support from other people who can relate to the struggles they may face as a foster parent. Once the parents feel supported they can better provide for the children in their care which is the main purpose of The Bair Foundation.

28. Elizabeth Raynes

Faculty Mentor: Elizabeth Patterson Roe

Trauma Based Outcomes

Encompass Counseling provides both outpatient and home-based therapy depending on the need of the client. Post-Traumatic Stress Disorder (PTSD) is just one of the many diagnoses that professionals at Encompass Counseling treat. Encompass Counseling is focused on becoming a trauma-focused agency. The present study will compare the outcomes of intensive trauma therapy versus those who have received traditional out-patient therapy for treatment of PTSD. Intense trauma therapy is defined by three hours of trauma-therapy work for no more than 5 consecutive days by a trained intensive-trauma therapist. The present study will conduct secondary data analysis of pre and post treatment symptoms scales. The data will help the agency evaluate how effective the trauma therapy programs are.

29. Jacob Bohrer

Faculty Mentor: Elizabeth Patterson Roe and Jane Hoyt-Oliver

*Social Work Burnout: How Might Burnout Differ Between
Medical Discharge Planning and Hospice Care Social Workers?*

This study explores burnout among social workers. The researcher seeks to answer the question, are social workers in different job positions more prone to burnout than others? The study is intended to shed light on the possible commonalities and differences that social workers practicing in different positions have. The two job positions that this research study explores are social workers in a medical discharge planning role, and social workers in a hospice care role. The above research question was formed from the hypothesis that hospice care social workers are more likely to experience more burnout than social workers in less stressful positions. This study deployed a descriptive research design, and utilized both convenience sampling, along with a cluster sampling. Surveys were administered separately to hospital discharge planning and hospice care social workers. The results of the surveys were then compared to understand differences and similarities between burnout in each group.

30. Carrie Miller, Tory Young

Faculty Mentor: Elizabeth Patterson Roe

The Effects of Faith and Education on Burnout

Research has shown that there is a high rate of burnout among Child Protective Services (CPS) employees. Through a convenience sample survey, this research sought to discover the rates of burnout among staff at Child Protective Services in Stark County. This study also explored the relationship between faith and spirituality and education on the burnout of CPS employees. The researchers believe that the results will help both the participants and the agency as a whole to understand whether or not their background education or current faith and spirituality have an impact on their feelings of burnout. The results of this study will also help CPS to understand any ways they can better serve their staff to prevent burnout.

31. Shannon Ferrell

Faculty Mentor: Elizabeth Patterson Roe and Jane Hoyt-Oliver

Lifestyle Themes among Hannah's House 119 Mentees

Hannah's House 119 is a faith-based mentoring organization whose mission is to connect with and support young people to give them the chance to rise above their current circumstances through guidance, life skill training and opportunity. This research utilizes data that has previously been collected by the agency through monthly mentors' reports to assess common themes amongst clients and how the client is handling personal life experiences. These themes include but are not limited to pregnancies, parental issues, and involvement in foster care, and drug use. This research evaluates the prominence of those themes among the agency clientele and the agency's involvement with related themes. This research will benefit Hannah's House 119 to understand how best to address issues their clients face in order design mentoring and other programs to address the clients' needs based on these discovered themes.

32. Laura Marvin

Faculty Mentor: Elizabeth Patterson Roe and Jane Hoyt-Oliver

Using Patient Files to Understand Depression in Nursing Home Residents

Older adults in residential care often struggle with depression. The Canton Christian Home desires to determine how to best serve their residents who have depression. This project represents a secondary analysis of data from patient's files in order to understand characteristics of Canton Christian Home nursing home residents who have depression. This project presents a review of patient files of nursing home residents who have depression in order to understand common themes. The goal of the research is to help Canton Christian Home implement interventions to aid their clients with depression in order to improve their quality of life.

33. Carolyn Eshelman

Faculty Mentor: Elizabeth Patterson Roe and Jane Hoyt-Oliver

The Effects of Music on Dementia and Alzheimer's

Direction Home Area Agency on Aging is a non-profit organization that focuses on the aging and disabilities population. They provide services to help them stay home and provides resource, one program in particular Music and Memory. According to literature, music therapy is a cost effective alternative to treating participants diagnosed with dementia. This study was conducted to explore the effectiveness of music is an alternative method to help participants who have been diagnosed with mild to moderate dementia and suffer from depression. The participants of the study have a diagnosis of dementia. They are given pre-recorded music to listen to on an iPod. The participants fill out a survey before and after they have listened to the music. The results reveal whether or not this form of music therapy is effective for the participants. This study will help the agency to understand if their current dementia music therapy program is effective and treating consumers with dementia.

34. Melissa Riskin

Faculty Mentor: Elizabeth Patterson Roe

The Effectiveness of the Children's Network: A Caregiver's Perspective

The Children's Network of Stark County is a Child Advocacy Center that assesses child maltreatment and helps children and their families cope with exposure to violence, human trafficking, sexual abuse, and severe physical abuse. Their work helps bring justice to children whose rights have been violated by prosecuting their offenders and providing services to cope with the child's trauma. This study uses the Initial Caregiver Survey collected over the past six months to analyze whether or not the needs of the non-offending caregivers are being met.

35. Zachary Murray

Faculty Mentor: Greg Miller

Pius XII: Case Study of Historiography

Historical research can bring the researcher to two very different findings. The research field of Pope Pius XII has developed both a condemnation and an honoring of Pius XII's actions during WWII. Two sides of the debate are examined in the paper: whether Pius is or is not in part responsible for Nazi Germany's actions. By examining the two different historical arguments, I demonstrate how to do historical research and do it well. By doing so, I offer a middle ground and try to reconstruct a more balanced historiography of Pius XII, while additionally offering insights into future research.

36. Cory Edwards

Faculty Mentor: James Glasgow and Kyle Calderhead

AIA (Artificial Intelligence Algorithm)

This project is a test of a new algorithm, Artificial Intelligence Algorithm (AIA), to determine if this new algorithm is capable of learning. The test consists of human players playing the "Game of Life and Death," against either other humans, a dumb AI (where the computer makes random moves), an average AI (where the computer knows the rules of the game and considers all possible moves to choose the move of greatest impact), or the new algorithm which I call smart AI. The "Game of Life and Death" is a competitive version of Conway's Game of Life. Scores will be tallied and means tested to determine if the "smart AI" is actually performing "smarter" showing that it is learning, or if the new program is faulty, and thus needs revision.

37. Michaela Woods, Elisha Pallotta

Faculty Mentor: Jeff Goff

Alarm Pheromones in Bald-faced Hornets

The bald-faced hornet, *Dolichovespula maculata*, is a venomous, eusocial wasp of the family vespidae. Studies have shown that many vespids use alarm pheromones to alert conspecifics. Although abundant anecdotal evidence suggests that bald-faced hornets utilize alarm pheromones as well, this has not been previously studied. In this study, *D. maculata* venom collected from excised venom sacks was shown to elicit alarm responses in live colonies. Neat isoamyl acetamide, an alarm-producing component of the venom of other vespids, was not efficacious for eliciting *D. maculata* alarm response. Discoloration of venom sacks within days at 0-4°C and vacant GC-FID runs in venom headspace analyses suggest that *D. maculata* alarm pheromone is fairly volatile and further elucidation of specific volatile components will necessitate dry ice preservation.

38. Kelsey Veldhuizen, Jacqui Peterson

Faculty Mentor: Jason Courter

The Effects of Urban Noise on the Alarm Calls of Black-capped Chickadees

The impacts of urbanization on wildlife have been well-documented, but one aspect of urbanization that has been largely overlooked is the potential for traffic noise to interfere with vocal communication in birds. The purpose of this study was to assess the impacts of traffic noise on alarm calls of Black-capped Chickadees. We studied birds at eight feeder locations in Stark County in the spring of 2016 and used a taxidermic mount of an Eastern Screech-Owl to elicit alarm calls. In half of the trials, we broadcast a recording of traffic noise from a speaker at 50 decibels. We found that the introductory notes and D-notes of chickadees had lower peak frequencies in trials conducted in the presence of traffic noise ($P = 0.013$ and $P = 0.031$, respectively), suggesting that chickadees may have the ability to modify their calls to overcome interference from traffic noise.

39. Jesse Sockman

Faculty Mentor: Jason Courter

*The Impacts of Temperature and Precipitation on Nesting Dates of Eastern Bluebird *Sialia sialis* and Tree Swallow *Tachycineta bicolor* in Ohio*

Avian reproduction is influenced by environmental conditions and certain requirements must be met for birds to breed successfully. Utilizing nesting records from Cornell University's NestWatch project collected between 2000-2015 (N = 6,172), the reproductive patterns of two cavity nesting birds (Eastern Bluebird and Tree Swallow) were investigated in three climate divisions of Ohio in relation to spring temperature, precipitation, and growing degree-day accumulation. Mean first egg dates of Eastern Bluebird were negatively correlated with spring temperature, but positively correlated with spring precipitation. Tree Swallows, however, only showed significant influence from spring precipitation. This suggests that spring precipitation may be a strong, and perhaps overlooked, variable influencing Tree Swallow reproduction in Ohio. Our results also provide a mechanism for using degree-days to identify potential overlaps between periods of high food needs for birds and important biological pest suppression windows for farmers.

40. Jesse Sockman

Faculty Mentor: Karyn Collie

*The Impacts of Crowd Density on the Presentation of Stereotypic and Interruption of Natural Behavior in Captive African Lions *Panthera leo* at the Akron Zoo as a Case Study*

Research indicates that the presence of visitors alone can impact the behaviors expressed by captive animals and may be active stressors. Stress in captive environments can lead to the exhibition of stereotypic, abnormal behaviors. Large felids do exhibit stereotypic behaviors such as pacing, self-mutilation, and other atypical behaviors. This study aims to investigate the relationship between human visitor population density and the occurrence of stereotypic behavior or interruption of natural behaviors in captive African lions. In order to accomplish this task, the population of humans at the enclosure were recorded every minute to ensure that population is accurately tracked. The stereotypic behavior were recorded every occurrence with both start and end time so that the duration and quantity are reliable. The behaviors recorded were pacing, vigilance, resting, feeding, aggression, over-grooming, other abnormal, and other.

41. Erika Cline

Faculty Mentor: Karyn Collie

Enrichment and Exhibit Usage of the Sumatran Tiger

I studied the Sumatran tiger at the Akron Zoo across a two-day time period. This zoo has just been approved to rebuild the tiger exhibit, so I decided to look at the use of the current enclosure space and enrichment. My hypothesis was that the tiger would pace the borders of the enclosure and limit the amount of space that was spent in the middle of the exhibit. This hypothesis was made because the enclosure is significantly smaller than the distance that the tigers would travel in the wild. I monitored the tiger and recording where the animal was in the exhibit and what it was doing every two minutes. Six different areas of the exhibit were blocked off for this study. Enrichment use and scent marking, and the location where these behaviors occurred, were recorded each time they were exhibited. The data from this project could help to inform the new exhibit at the Akron Zoo.

42. Sabrina Adams

Faculty Mentor: Karyn Collie

Effects of People on Andean Condors at the Akron Zoo

This research looked at the effects of people on Andean condors at the Akron Zoo. The enclosure was divided into three zones. I sought to determine if the condors came up to the front or retreated further back in the presence of people. By comparing zones and behaviors, which were categorized as aggression, stereotypic behaviors, object use, and interest in people, I could determine if the condors were stressed or content. Additionally, an alpaca exhibit is within their view. If the condors showed no evident behaviors with people present but reacted to the alpacas doing something, the behaviors were marked as “caused by alpacas.” Determining which behaviors were caused by the alpacas or the presence of people was challenging because I could not see if people were approaching the exhibit. This study is useful in determining if the presence of people has a negative effect on the Andean condors, and is able to help the zoo find ways to make the condors more comfortable.

43. Elisha Pallotta

Faculty Mentor: Karyn Collie

Andean Condors in the Akron Zoo

My question: How often do Andean condors attempt flight while in captivity? How does that compare to their time spent on the ground? If possible, deduce what the motivation factor(s) is to cause flight behaviors. Also record behaviors specific to wing movement and differentiate between pre-flight behaviors, grooming and mating behaviors.

My hypothesis: I expect to see little to no flight behavior from the condors even though the ones being observed are fully flighted.

Andean condors in the wild spend most of their time riding thermal updrafts and soaring through the skies with a wingspan stretching from eight to ten feet in length. The Andean condors in the Akron Zoo are fully flighted within their enclosed exhibit. Although their enclosure is large, there is insufficient room to achieve comfortable flying heights, along with no elevated perching in the enclosure. As a result, they do not require the use of flight. I want to see how often they attempt to take flight--how often they leave the ground or fly to the opposite side of the enclosure. I had observed them and recorded behaviors every minute for wing movement, specifically in regards to pre-flight behaviors. I determined pre-flight behaviors when the condor(s) started to run and flap their wings as they get a head start before they take off. I will also record wing movement regarding grooming, courtship behaviors, sun-bathing, and stretching. I compared the amount of time spent attempting flight, with wings fully outstretched, to time spent with wings not extended.

44. Rachel Maioriello

Faculty Mentor: Karyn Collie

Social Interactions among Black-and-White Ruffed and Ring-Tailed Lemurs

I conducted an observational study on the social interaction between captive ring-tailed lemurs and black-and-white ruffed lemurs at the Akron Zoo over a period of two days to determine if lemurs have a preference for interacting with their own species. I hypothesized that friendly interactions within the same species would occur more often than friendly interactions within two different species. Scan sampling was used every minute to record any instance of friendly, social interactions within two individuals including behaviors such as grooming, and being in touching contact with each other in a calm, non-aggressive manner. This method was also used to record instances of aggressive interaction including fighting, squealing vocalization at another individual, and submissive fleeing from another individual. Scan sampling was also used to record behaviors including vocalization, resting, eating, self-grooming, and moving to get an overall idea of their behaviors. This study will aid in recognizing the effects of enclosing these two species together on species-typical behaviors.

45. Wesley McBride

Faculty Mentor: Karyn Collie

Visitor Presence and Behavioral Changes in a Captive Red Panda

Red pandas (*Ailurus fulgens*) in the wild are solitary individuals that have a large home range and spend most of their time foraging for bamboo leaves and shoots. In the wild they are solitary creatures, and they often abandon habitat near urbanization attempts in the Himalaya Mountains. I performed a case study on one red panda individual at the Akron Zoo. Over six-hour periods on two days (4/1/17 and 4/8/17) I observed the individual to see if territorial behavior frequency increased when more visitors were present near the enclosure. Two territorial behaviors were identified and monitored, marking via rubbing of anal glands on foliage and patrolling of the enclosure's perimeter. Samples were recorded in five minute intervals and both current behavior and number of visitors were recorded. All occurrence sampling was used to record instances of territory marking and when new visitors arrived at the enclosure. Data was analyzed to determine if territorial behaviors occurred more frequently when visitors were present.

46. Mia Mullaney

Faculty Mentor: Karyn Collie

Effects of Mixed-Species Exhibits on Stereotypic Behaviors in Golden Lion Tamarins

Today in zoos, many are trying to move towards creating a more natural living environment for the animals. This shift can include the idea that different species can live together in captivity as they can in the wild. In the wild, golden lion tamarins are native to the tropical rain forest, an incredibly diverse habitat. By keeping them in a mixed-species exhibit in captivity, we are providing them with environmental enrichment, which ultimately relieves stress. I predict that golden lion tamarins that are housed in multiple-species exhibits will spend most of their time active, while exhibiting a smaller percentage of stereotypic behaviors. I am conducting observations over the course of two different days at the Akron Zoo, where the tamarins are kept in a mixed-species exhibit. I record some behaviors, such as foraging and stereotypic behaviors, every minute using scan sampling, as well all-occurrences recording of both positive and negative interactions with members of the same species and different species.

47. Mia Mullaney

Faculty Mentor: Karyn Collie

Kin Recognition in the Colorado Potato Beetle

The Colorado potato beetle is an important crop pest that was first found in the United States in 1811, best known for their pesticide resistance and sibling egg cannibalism. Females lay clutches that include both half and full sibling on the undersides of leaves. Egg cannibalism reduces competition, and eating half siblings rather than full siblings should further improve fitness. The purpose of this experiment was to determine whether potato beetle hatchlings can distinguish between eggs based on relatedness. Individuals about to hatch were placed with four other eggs, some maternal or paternal half siblings, full siblings, non-siblings from the same population or from a different population. We recorded the larvae for 24 hours after they hatched. We then analyzed the videos to measure how many eggs of each type were eaten and how quickly the larvae ate them to determine whether there was a preference for less-related eggs.

48. Micayah Miller

Faculty Mentor: Karyn Collie

Grizzly Bear Space Use

Akron Zoo has two grizzly bears and a large enclosure in which they can wander. I examined where in the enclosure each bear spends its time and what activities are performed in each part of the enclosure. I measured where in the enclosure they spent the most time by separating the enclosure into quadrants, recording how long each bear spends in each quadrant, and what activities are performed in that area using scan sampling. The bears' activities I recorded were play, interactions with enrichment items, feeding, pacing, and interactions with the other grizzly. Pacing is defined here as a repeated pattern, such as walking back and forth more than 3 times or walking in a circle around enclosure more than once. I hypothesize the bears will favor one or two quadrants and be more active where there are more enrichment opportunities. This preference could be due to a positive association because of increased enrichment items or reduced exposure to visitors, or a negative association, shown by increased stereotypic behavior or pacing in those quadrants.

49. Kirsten Miller

Faculty Mentor: Karyn Collie

*Activity Levels between Juvenile and Adult Snow Leopards
(Panthera unica) at The Akron Zoo*

The Akron Zoo has four snow leopards (*Panthera unica*) that are usually all out at the same time. I studied how these snow leopards spent their time. I compared the time spent being active and the time spent resting for the juveniles and the adults. I wanted to know if they spend more of their time moving around and playing, or if they spend more of their time sleeping or lying around. Active behaviors included playing, either with enrichment or with each other, and running or walking. Resting behaviors included sleeping sitting, and lying awake. I also monitored any other behaviors that they exhibited that I did not list. I did a scan sample and recorded the behavior of each individual every minute. I expected the snow leopards to spend more of their time being active.

50. Zach Force

Faculty Mentor: Karyn Collie and Jason Courter

Activity Level of Red Pandas at the Akron Zoo

Red Pandas are small mammals that live in the mountains of Nepal, central China, and northern Myanmar. Red pandas are natural foragers and will spend nearly half of their time in the wild staying active. They also like to spend time in trees. In my study, I am looking to determine what activities the red panda performs the most. The time of day is also taken into consideration in this study. This study can help determine whether red panda behavior at the Akron Zoo is similar to red panda behavior in the wild. In order to study these behaviors I observe the red panda using the scan sampling method. I use this method to observe four different behaviors. These behaviors include locomotion on the ground, time spent awake and active off of the ground, eating, and sleeping/inactivity as well as a category for other behaviors that do not fit these criteria. Every two minutes I record the behavior that the animal is exhibiting. I predict that the red panda will spend most of its time climbing or moving around on the ground of the exhibit because they are normally active during the morning and evening and will spend time foraging each day.

51. Lindsey Spann

Faculty Mentor: Karyn Collie

*Comparison of Snow Leopard (*Uncia uncia*) Activity and Himalayan Tahr (*Hemitragus jemlahicus*) Vigilant Behavior*

In the wild, the Himalayan Tahr's vigilant behavior is positively correlated with snow leopard population density. At the Akron Zoo, the exhibits for these two species are adjacent to each other with a glass window dividing them. Because of this, the tahr has become habituated to the snow leopards' presence. However, this study aims to see if the snow leopards' activity may subtly impact how the tahr behaves. A scan sample of the Tahr exhibit was used to look for vigilant and relaxed behaviors. I then used data about the snow leopards' active and relaxed behavior collected from another study, to compare the behavior of the two species to see if there is any correlation. I predict that there is a positive correlation between active behavior in the snow leopards and vigilant behavior in the tahrs. However, due to the tahrs being habituated, there may not be any correlation.

52. Pamela Dare

Faculty Mentor: Karyn Collie

Are the Red Wolves at the Akron Zoo Stressed?

I studied the two red wolves at the Akron Zoo on 3/19 and 4/9. I compared the difference in typical and atypical behavior length. A goal of any zoo should be to encourage animals to display natural behaviors. Measuring the frequency of stereotypical behaviors is a way to see if a zoo is achieving this goal. I measured behavior durations by recording the start/stop times of my selected behaviors: sniffing each other; laying down touching bodies; playing, defined as small hops and yips; pacing the same path (ending when the wolf left the rut); laying more than twenty feet apart; and grooming. I defined over grooming (an atypical behavior) as grooming the same spot for more than thirty seconds. Grooming multiple spots counted as a typical behavior. I compared the average duration of each behavior between the two types (atypical and typical). I expected to see more atypical/unnatural (pacing, laying far apart) than typical (sniffing each other, laying down touching, playing) behaviors because, although zoos try, they cannot truly replicate natural settings.

53. Caitlin McPeck

Faculty Mentor: Karyn Collie

The Effect of Baby Schema on Zoo Visitations

Studies have suggested that humans prefer species that are more interesting, and appealing. This is creating a large issue because most of the world's endangered species are not particularly eye catching. Most endangered species are considered "average" or "boring" so not as many people are interested in saving these species. I will be studying the difference between the behavior of humans at the ring-tailed lemur/black-and-white ruffed lemur/red ruffed lemur versus their behavior at the Henkel's leaf tailed gecko's exhibit. I will be looking for the following behaviors: picture taking, number of visitors, negative/positive remarks, reading signage, and time spent at each exhibit. These behaviors will be looked for through the method of scan sampling with a 5 minute interval. I expect to see more visitors and more interest in the lemurs than the geckos. I will also be adding two variables, social facilitation and my enthusiasm for the geckos to see if this raises attention for the geckos. Due to the Akron Zoo's facility I will be able to observe both exhibits at all times.

54. Christopher Evans

Faculty Mentor: Karyn Collie

Grizzly Proximity and Stereotypic Behavior at the Akron Zoo

I am studying the male and female grizzly bears at the Akron Zoo. They were born in the wild, and their mother was shot by a hunter. I hypothesize that these siblings will spend more time together than apart from one another. I define "together" as being within at least three body lengths of each other. I use scan sampling to see their proximity at a fixed interval. Every five minutes I mark down if they are "together" or "apart". I also hypothesize that they will exhibit social play behaviors such as rough-housing. I define rough-housing as play fighting that involves at least one of the bears getting onto its hind legs while making contact with the other. I am using all-occurrence sampling to count the number of times that this behavior is expressed. Rough-housing is a form of social play that young bears express and it is especially common to find this behavior in young bears of the opposite gender. Rough-housing, or lack thereof, will allow me to determine whether or not proximity is due to positive associations.

55. Carey Titus

Faculty Mentor: Karyn Collie

Interspecific Interactions in Waterfowl at the Akron Zoo

In zoos all across the world, it is common to find mixed-species enclosures containing animals that, when in their native habitats, would not normally meet. In this study, I examined whether or not the addition of non-native species of waterfowl altered the dominant and submissive behaviors of ducks normally found in Ohio. To do so, I utilized the Akron Zoo's mixed species waterfowl exhibit, as well as the natural history of all the species inside. During my time observing, I used an all-occurrence technique to record all instances of dominance (seen as chasing or showing aggression) or submission (seen as moving away) in all species present. Once data were collected, interactions between native and non-native birds were compared to the natural demeanor of the species to see if any changes were present. Interactions for both actor and recipient species were recorded, including intraspecific encounters for reference. I hypothesized that the more abundant native species would show more dominance over the fewer non-native birds.

56. Megan Dues

Faculty Mentor: Karyn Collie

Behavior Studies in Lemurs – Comparing 3 Species of Lemurs Behaviors and Differentiating Between Living Together and Separate

Several studies have been done on natural behaviors in many species of lemurs in the wild. The three species of lemur at the Akron Zoo are the red-ruffed lemur, the black and white ruffed lemur and the ring-tailed lemur. Each species lives in a different part of Madagascar with ranges large enough for them to interact. I studied their individual behaviors, such as eating and grooming, as well as their interactive behaviors. I recorded how much time they spent in the trees and on the ground. Some interactive behaviors included social behaviors, such as playing, and territorial behaviors, such as howling. Using all-occurrence sampling, I recorded each behavior every time they performed that behavior. I compared my results of behaviors in a mixed-species enclosure to similar studies on those lemurs living in single-species enclosures.

57. Kimberly Wise**Faculty Mentor: Karyn Collie**

Commotion Effects on Coyotes in Captivity

Coyotes are a nocturnal species that usually hunt at night but can occasionally be seen in the morning and evening. Since zoos are limited to what time they are able to feed their animals, and due to the commotion of the crowd of people, I want to see the effects this has on their sleep patterns. I am conducting this experiment by watching the activities of each coyote and marking down when they become active, for how long, whether there is an increase in the number of people around, or if it is due to their scheduled feeding time. This is a scan sampling study, looking at each coyote every time they are active for the duration of that activity. I will also be recording the number of people in the area every five minutes. By looking at when they become active and for how long, I can test for a correlation.

58. Olivia Roupe**Faculty Mentor: Karyn Collie**

Mimicry and Aggression in Captive Blue jay

One of the most commonly seen species of Passeriformes (songbird) in North America is the blue jay (*Cyanocitta cristata*). Blue jays are very intelligent birds; they have been heard mimicking the call of a red shouldered or red-tailed hawk when approaching a feeder to scare away other birds. They are also aggressive towards other birds when competing for food, often flying at them with crest raised to push them away. I observed the blue jay at the Akron Zoo aviary for two Saturdays in April. I wanted to see whether a captive blue jay would mimic the hawk call when near a feeder and which species they would show aggression towards or tolerate at a feeder. Using an ethogram to record data, I monitored the feeders and marked all occurrences of the blue jay's presence and aggression or tolerance of each species at the feeders. I also marked all occurrences of the hawk mimic call.

59. Danielle Waibel**Faculty Mentor: Karyn Collie**

*Stereotypic Behaviors of the Malayan Sun Bear (*Helarctos malayanu*)*

I have studied stereotypic behaviors of sun bears (*Helarctos malayanus*) at the Akron Zoo. The two categories of stereotypic behavior that I have observed are locomotion and oral. Locomotion stereotypes are defined as pacing, body rocking, and head swaying. Oral stereotypes are defined as mouthing nonfood items, excessive grooming, and chewing of nonfood items while not engaged in play. I used a focal animal model. I measured these activities in seconds and marked the time of day that the activity occurred. The stereotypy was considered finished after 3 seconds of inactivity. I compared the frequency of these behaviors throughout the day and how frequent they are during the certain time periods. I hypothesize that locomotive stereotypes will happen more frequently throughout the day and oral stereotypes will be more frequent after feedings.

60. Margaret Houston, Andrea Fry**Faculty Mentor: Kathryn Huisinga**

Confused Fly Models Make Alzheimer's Research Difficult

Recent Alzheimer's studies have shown conflicting results about the toxicity of tau protein, the major constituent of neurofibrillary tangles and a hallmark of Alzheimer's disease, in *Drosophila melanogaster* (fruit fly) models. Current research has used rough eye phenotypes and random transgene insertion to model this phenomenon in flies with varied indications of toxicity. This project is the first phase of a multi-year study that aims to better understand and standardize methods for Tau modeling in flies. These standardization methods include controlling the location of transgene insertion using phiC31 technology and exploring new readout methods such as sensory bristles. We hypothesize that measuring toxicity using sensory bristles may be more sensitive and can be more easily quantified for comparison than using the rough eye phenotype. Thus far, we have prepared the tau transgene for insertion into live flies and begun collection of baseline data for normal fly eyes and number of sensory bristles.

61. Mackenzie Keller, Laura Tweedie

Faculty Mentor: Kathryn Huisinga

*Metabolic and Viability Effects of a Parental High Sugar Diet on F1 Progeny in *Drosophila melanogaster**

A variety of epidemiologic studies have demonstrated a link between parental diet and transgenerational metabolic effects, including increased susceptibility to diseases such as obesity and type 2 diabetes. Research utilizing the fruit fly, *Drosophila melanogaster*, as a model has shown a correlation between high sugar parental diets and an altered metabolic state in progeny. Here, we compared the paternal and maternal effects from a high sugar or normal sugar/control diet on the metabolic profile of offspring. The parental generation included males and females raised separately on control or high sugar diets to create six different combinations of crosses. Progeny were all reared on “normal sugar” diets and the metabolic profiles of available adult progeny were analyzed. In the process of our experiments we also discovered a differential effect on viability from the two diets which we are further investigating.

62. Caitlyn Ridenour

Faculty Mentor: Lisa Beltz and Kathryn Huisinga

Nitric Oxide and TNF-alpha Production by the Pro-Inflammatory iNOS Pathway in Activated Macrophages from Rats with Inactivated Melanocortin Receptor Genes

Obesity has many different components, including low grade inflammation due to elevated macrophage levels in adipose tissue creating a pro-inflammatory response via the inducible nitric oxide synthase pathway, producing nitric oxide and TNF- α . Alpha-melanocyte stimulating hormone acts on macrophage melanocortin receptors to downregulate this response. I hypothesized that white adipose tissue from rats with 2 inactive genes for melanocortin receptors would have significantly higher levels of nitric oxide and TNF- α and that samples from rats with 1 inactive gene would have levels of nitric oxide and TNF- α that were intermediate to those from normal rats. To test this, samples from rats with either 1 or 2 faulty genes or 2 normal genes were analyzed for variations in nitric oxide and TNF- α levels using the Griess reagent test, Bradford assay, and ELISA.

While the results were unexpected, they still yielded useful information. The Griess reagent test found no detectable levels of nitric oxide and the ELISA showed no statistically significant differences in TNF- α levels.

63. Destiny Ross

Faculty Mentor: Lisa Beltz

Comparisons in the Levels of Inflammatory Cytokines Tumor Necrosis Factor- α and Interleukin-1 and the Adipokine Leptin in Pancreases of High and Low Capacity Runner Rats

This project compares levels of two inflammatory cytokines and an adipokine (molecular messengers) in pancreases of rats predisposed to leanness (high capacity runners; HCRs) or obesity (low capacity runners; LCRs). The pancreas produces several hormones, including insulin, which allows cells to take up glucose from blood. Diabetes can result from inadequate insulin signals. Inflammation damages the pancreas and effects insulin production. This study is important due to increasing numbers of people diagnosed type II diabetes linked to obesity. I hypothesize that inflammatory cytokines and adipokine levels will be higher in pancreases of LCRs compared to those of HCRs. ELISA will be used to quantify inflammatory cytokine levels and the Bradford Assay, to measure protein levels. The Greiss Assay will quantitate nitrate levels, also associated with inflammation. These results may aid people with type II diabetes due to obesity or inflammation as a better understanding of their relationship may lead to new treatments, including use of anti-inflammatory compounds.

64. Samuel Miller-Eshleman

Faculty Mentor: Lauren Seifert

Impact of Victim-Offender Relationship and Number of Perpetrators on Sexual Assault Crime: Personal Accounts Online in the Public Domain

Research analyzing sexual assault crime characteristics is imperative for development of prevention and post-traumatic interventions. By analyzing 101 incident reports online in the public domain, this research project probed survivors' personal accounts of crime scenes, lending deeper insight into the nature of sexual assault perpetration. One significant finding was that the degree of violence per crime scene increased with the number of perpetrators, $t(96) = 4.20, p = .043$ ($N = 97$). Thus, gang rape may affect survivors more significantly, in terms of the degree of violence experienced.

Qualitative analysis was also employed, sharing pieces of the survivors' personal accounts to provide a practical picture of how the data were recorded and interpreted. Further online and traditional research should be conducted to determine, (a) which variables stand out as predictors of sexual assault crime incidents and (b) which of these salient variables are relevant to both sexual assault prevention efforts and therapeutic responses for survivors.

65. Megan Sullivan, Evan Zorn
Faculty Mentor: Lauren Seifert

Perceptions and Opinions Regarding Service Animals

There are increasing numbers of persons who utilize service animals as aids in disability. However, there seem to be many misconceptions in the general public about use of such animals. Our research question relates to perceptions of service animals on a college campus, including which disabilities qualify for service animals and what environments allow service animals. Our anonymous survey aims to show areas where campuses might work to better educate constituents. This might help persons with disabilities and their service animals to be better understood and accepted.

66. Vaughn Foster, Annie Boyle, Elizabeth Darrah
Faculty Mentor: Lauren Seifert

*The Correlation between Variants of Family Structure
and Mental Illness and Disorders*

Occurrences in a person's childhood can produce ongoing influences on subsequent reactions to stressful life events. The associations between one's childhood trauma and anxiety and mental health as an emerging adult have become increasingly identified among researchers. We hypothesized that the family of origin can be largely influential and have a powerful impact on the response to stress in early adulthood. Thus, we are conducting an anonymous survey regarding family organization and relationships in childhood and one's feelings of well-being in the college years. By using the Mental Health Continuum Short Form to index well-being, we predicted that there would be a positive correlation between the quality of familial relationships and one's self-reported welfare.

67. Shannon Myers, Kara Brathwaite

Faculty Mentor: Lauren Seifert

*Satisfaction of Malone University Students
with the Spiritual Formation Opportunities Program*

As a Christian institution, Malone University aims to provide many opportunities for students to experience spiritual formation. It is vital to observe the students' responses to these opportunities to observe their efficacy. Thus, we are seeking to determine the satisfaction of the students at Malone University with the Spiritual Formation program. Using an anonymous survey, we are questioning undergraduate residents and commuters to obtain their input. Working in consultation with the Department of Spiritual Formation, we will utilize the information to seriously consider how best to optimize the spiritual growth of Malone undergraduate students.

68. Veronica Gehring, Katelyn Beaton

Faculty Mentor: Lauren Seifert

The Effects of Anxiety on College Students

We believe that anxiety affects college students and may cause problems and difficulties throughout the years. We are studying the influences of social and academic anxiety on success in college. Our group is conducting an anonymous survey of Malone students, with multiple questions to reveal college students' struggles with anxiety and to discover what triggers anxiety. We predict that anxiety has a major effect on more than half of the people taking the survey, and that most people feel anxious at some point during the school day. We also predict that there are some severe cases, and we supply resources in our survey debriefing in order to help promote good coping among Malone students.

Symposium Planning Committee

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Special Thanks to

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In its ninth year as a Malone University event,

Malone University's Student Research Symposium

showcases student scholarship across schools and departments. Excellent projects from such programs as Chemistry, Computer Science, English, History, Mathematics, Nursing, Political Science, Psychology, Social Work, and Zoo & Wildlife Biology are part of this celebration of student achievement. Please, join us in congratulating student participants and their faculty mentors as we come together in community to honor graduate and undergraduate research and creativity.



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