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Celebration of Student Research and Creative  
Activity

Undergraduate

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2021-04-23

## Celebration of Student Research and Creative Activity 2021 Abstract Booklet

Xavier University (Cincinnati, Ohio)

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# **ABSTRACTS 2021**

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1:10pm - 1:35pm

[\*Climbing the Popularity Ladder: Social Comparison and Image Fixation on Instagram \(#Wo\*](#)

**Kiera Wolkins & Aubree Herman**

(Dr. Thomas Wagner, Communications)

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1:10pm - 1:35pm

[\*An Attitude of Gratitude: The Mediating Effect of Organizational Gratitude Between Prof\*](#)

**Carolanne Zelis**

(Dr. Alex Scrimshire, Management & Entrepreneurship)

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1:10 - 1:35pm

[\*2021 Spring Piano Recital \(#Rancourt\)\*](#)

**Regina Rancourt, Olivia Wakefield, Alex Carroll, Maddie Asbridge**

(Dr. Polina Bespalko, Music & Theatre)

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[\(#schutte\) The effect of fluoropolymer application method on the ability to trap longhorn](#)

**Emillie Hoh**

(Dr. Ann Ray, Biology)

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[Using Social Media to Improve Product/Service Quality \(#Dailey\)](#)

**Maureen Dailey**

Dr. Alan Jin (Business Analytics & Information Systems)

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[Affordable Housing Needs Assessment \(#Rocks\)](#)

**Liam Rocks**

(Dr. Jaylene Schaeffer, Social Work)

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**Claire Fischer & Pat Brown**

(Dr. Tammy Sonnentag, Psychology)

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[The effect of photographs on the narrative believability of positively and negatively fram](#)

**Camryn Backman**

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[The Effect of Praise on Helping Intentions in the Presence of Prosocial and Antisocial Norm](#)

**Katie Hughett & Stephanie Conners**

(Dr. Tammy Sonnentag, Psychology)

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[Relationship Between HIV Viral Load Rates and Specialty of Doctor \(#Stone\)](#)

**Danielle Stone**

(Dr. Jaylene Schaefer, Social Work)

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[Access to Safe Harbor: Juvenile Justice System and Human Trafficking \(#Cashman\)](#)

**Kendra Cashman**

(Dr. Jaylene Schaefer, Social Work)

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[The Effect of Belief Superiority and Congeniality of Information on Tolerance \(#Rose\)](#)

**Abigayle Rose & Ivy Lewis**

(Dr. Tammy Sonnentag, Psychology)

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2:10pm - 2:35pm

[\*Exploring cocaine metabolism and excretion in the presence of the fab fragment of an an\*](#)

**Josephine Pyles**

(Dr. Hanna Wetzel, Biology)

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2:10pm - 2:35pm

[\*Avondale: Storied Past, Uncertain Future \(#Grandon\)\*](#)

**Thomas Grandon**

(Dr. John Fairfield, History)

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2:10pm - 2:35pm

[\*Approaching an eight-step formal synthesis of kalkitoxin \(#Stephan\)\*](#)

**Stephan Freeman**

(Dr. Richard Mullins, Chemistry)

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[\*Macroinvertebrate community structure in relation to habitat and location within an urba\*](#)

**Zachary Smith, Tyler DiPetrillo, Mio Kamioka, Brian O'Dell, Colleen Spolar & Riley Whalen**

(Dr. Mollie McIntosh, Biology)

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[Exploring the Impact of Emotional Intelligence on Entrepreneurial Development and Choi](#)

**Xavier Escalante**

(Dr. Saurav Pathak, Entrepreneurial Studies)

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[An Examination on the Relationships between Collegiate Quarterback Statistics, NFL Draft](#)

**William Steuk**

(Dr. Marco Fatuzzo, Physics)

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**Tessa Doan**

(Dr. Tammy Sonnentag, Psychology)

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[Characterizations of Proteins with Unknown Functions \(#Becker\)](#)

**Ashley Becker & Matthew Benedek**

(Dr. Stephen Mills, Chemistry)

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[Gay-Straight Alliances in Schools \(#Tobler\)](#)

**Annie Tobler**

(Dr. Jaylene Schaefer, Social Work)

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[Victim's Assistance Liaison Unit COVID Client Satisfaction Survey \(#Dulle\)](#)

**Grace Dulle**

(Dr. Jaylene Schaeffer, Social Work)

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## Abstracts

**Anna Snyder & Haydee Castillo** (Dr. Tammy Sonnentag, Psychology)

*It is More than Understanding Others: Perspective-Taking Changes Self-Perceptions*

The imaginary nature of taking another's perspective affects how individuals view themselves. This process, known as perspective taking, is the adoption of another person's point of view by taking on his/her personality or adopting his/her way of thinking (Greenbert & Murphy, 2019). Research demonstrates that perspective-taking can blur the distinction between self and another person (Burgoyne et. al., 1999). Consequently, this study examined if participants' self-perceptions can be modified by taking the perspective of certain characters. Using a pre-test/post-test independent-groups design, data was collected from 106 undergraduate students enrolled in psychology courses at Xavier University. Prior to random assignment to one of three conditions, participants completed a questionnaire, adapted from Jordan et al.'s (2015) Moral and Self-Image scale, assessing their self-perceived morality and helpfulness (pre-test). Subsequently, participants completed a perspective-taking task, adapted from Nelson and Norton (2005), where they took the first-person perspective of either a superhero or supervillain (experimental conditions) or the third-person perspective of a superhero or supervillain (control condition). Finally, participants re-completed the questionnaire assessing their self-perceived morality and helpfulness (post-test; Jordan et al., 2015). A 2 (pretest vs. post-test) x 3 (first-person superhero vs. first-person supervillain vs. third-person superhero or supervillain) mixed-design analysis of variance (ANOVA) was conducted with morality and helpfulness as the dependent variables. The study found a significant increase in self-perceived morality and helpfulness when participants took the first-person perspective of a superhero and a significant decrease in self-perceived morality and helpfulness when participants took the first-person perspective of a supervillain. In contrast, no change was found for participants' self-perceived morality and helpfulness when they took the third person-perspective of a superhero or supervillain. The current study provides evidence to support the claim that perspective-taking can create both positive and negative alterations in self-perceptions, depending on the perspective-taken, due to a potential confusion between self and other understanding acquired through increased empathy and understanding.



**Katie Hughett & Stephanie Conners** (Dr. Tammy Sonnentag, Psychology)

*The Effect of Praise on Helping Intentions in the Presence of Prosocial and Antisocial Norms*

Many people tend to contribute to helping causes by donating money or through volunteering (Hubbard et al., 2016). Because human behavior is often motivated by social norms present in the situation, it may be unsurprising that individuals tend to display helping behavior in the presence of prosocial norms and harmful behavior in the presence of antisocial norms (Nook et al., 2016; Kawamura & Kusumi, 2016). Despite research on the powerful effect of norms on helping behavior, there may be factors that further impact how these norms affect individuals' behavior. One of these factors that may affect the individuals' helping behaviors is the presence of praise. Previous research has shown that motivation to engage in prosocial behavior increases when prior prosocial behavior is praised (Bear et al., 2017). Although helping behavior may be expected in the presence of a prosocial norm or in response to praise, there is little research on the likelihood of helping behaviors in response to praise under antisocial norm conditions. In this research, we examined if praise would influence short- and long- term helping in the presence of prosocial and antisocial norms, but particularly if praise was powerful enough to promote helping in the presence of an antisocial norm. Specifically, we hypothesized that people would be more likely to engage in short- and long-term helping in the presence of a prosocial compared to antisocial norm. They would also be more likely to engage in both short-term and long-term helping when prosocial behavior was rewarded with praise compared to when it was not praised, and that short- and long-term helping would be greater when behavior was praised (compared to not praised), even in the presence of an antisocial norm. 118 undergraduate students from Xavier University were recruited to participate in this study. Participants were randomly assigned to one of four conditions reflecting a 2 (Positive Praise: present vs. absent) x 2 (Norms: prosocial vs. antisocial) between-subject design. Participants read one of four newspaper articles describing students who had either positive (prosocial norm) or negative (antisocial norm) attitudes about engaging in helping behavior in the context of required service learning. The newspaper articles offered either positive praise or no praise in regard to the students' helping behavior. Finally, participants completed a measure using 11 statements adapted from McClure et al.'s (2017) "Civic Engagement Student Impact Assessment" and Law et al.'s (2011) "Revised Personal Functions of Volunteerism," scales to assess their willingness to help others by engaging in service learning currently and in the future. The results revealed no difference in both individuals' willingness to engage in short- and long-term helping in

the presence of a prosocial or antisocial norm and in individuals' willingness to engage in short- and long-term helping in the presence of praise. Given that these results are inconsistent with previous literature, we suggest that future research should actively engage participants in a social norm situation in order for the norm to be in full effect and give praise verbally in order to attempt to control how it is experienced/perceived.

**Tessa Doan** (Dr. Tammy Sonnentag, Psychology)

### *Faculty's Perceptions of the Barriers and Benefits to Service and Community-Engaged Pedagogy*

Utilizing service and community-engaged learning in higher education courses is a growing trend, and has yielded positive outcomes for student academic successes (Conway et al., 2009; Guo et al., 2016; Knapp et al., 2010). Specifically, students who participate in service and community engaged learning demonstrate increases in motivation, greater academic persistence and degree completion (Einfed & Collins, 2008; Eylers et al., 2001; Simonet, 2008). Two explanations for why students appear to benefit from service and community engaged learning include the benefits of applying course material to the real world and the strengthening of their openness to diversity (Butin, 2006). Despite the rich literature on how students benefit from service and community engaged learning, integrating this type of learning into college courses has been met with reluctance from some faculty.

Consequently, this study examines faculty's perceptions of various barriers and benefits of service and community engaged learning and if these perceptions differ between faculty who do and do not integrate service and community engaged learning into their courses. A total of 80 faculty members from institutions of higher education across the U.S participated in this online survey. Participants rated the extent to which they perceived 12 barriers (e.g., Too much course content to cover; not enough class time) and 12 benefits (e.g., Promotes deeper (i.e., critical) thinking about the real-world) to service and community engaged learning. Results revealed that of the 12 benefits, faculty who do employ service or community-engaged learning endorsed 11 of the strength more than faculty who have do not employ service or community-engaged learning in their courses. In contrast, for the 12 barriers, faculty who do not employ service or community-engaged learning endorsed 9 of the barriers more than faculty who do employ service or community-engaged learning in their courses. This study adds to the existing literature on service and community-engaged learning in higher education courses.

**Aidan Noga** (Dr. Tammy Sonnentag, Psychology)

*A Social Psychological Analysis: Reasons for Corporate Prosocial Behavior During Time of Crisis*

The COVID-19 pandemic has negatively impacted the lives of many people. Changes in routines, health, and employment have created a burden felt around the world. In the face of these hardships, impressive charitable contributions have been made to help mitigate, even if only slightly, the hardships experienced during the pandemic. For example, donations of footwear by Croc's Share a Pair for Healthcare campaign and the availability of free oil changes by Mazda North America are just two examples of the countless positive contributions that corporations have made during the pandemic. Social psychological theory and research can provide a lens to examine and explain how and why corporations, such as Crocs and Mazda North America, chose to engage in these prosocial behaviors during times of crisis. Specifically, social exchange and social responsibility theories offer particularly powerful explanations for why corporations may choose to help during the COVID-19 pandemic. The current paper applies social exchange and social responsibility theories and research to explain corporations' prosocial behavior during times of crisis. Although both theories provide a meaningful explanation of corporate donations during the COVID-19 pandemic, future research should test which of these potentially competing theories best explains corporate giving during times of crisis.

**Emillie Hoh** (Dr. Ann Ray, Biology)

*The effect of fluoropolymer application method on the ability to trap longhorn beetles*

The fluoropolymer Fluonâ is a surface conditioner for cross-vane panel traps that increases capture rate of longhorned beetles during field surveys for wood boring insects. There are several different methods for applying Fluonâ, which vary by cost and ease of application. At the time of this study, it was unknown which application method was most effective, as well as how many years traps with different treatments could be used before losing effectiveness. We tested five treatments for cross-vane panel traps in field bioassays to examine differences in capture rates of adult longhorned beetles. Significantly more beetles were trapped in traps with freshly applied aerosol Fluonâ, than in traps treated with aerosol Fluonâ during the previous field season. There was no difference between freshly applied liquid Fluonâ and liquid Fluonâ applied during the previous field season. These results suggest that liquid treatment remains effective for at least two field seasons, while

aerosol loses effectiveness after just one season.

**Natalie Loux** (Dr. Jaylene Schaeffer, Social Work)

*Racial Comparisons Among Juveniles Served By The Hamilton County Public Defender's Office*

This specific research project is dedicated to a descriptive study of youth served by the Hamilton County Defender's Office in the Juvenile Division from December 2018 to December 2019. All of the clients who are analyzed in this study are facing a discretionary motion to relinquish jurisdiction, also known as a transfer to adult court or bind-over. Clients are categorized by racial background, either Black or white, as well as their discretionary outcome, adjudication outcome, and dispositional outcome. The discretionary outcome will categorize clients based on whether their case was transferred or if it remained in juvenile court. Adjudication outcome specifies if the case went to trial, if the client took a plea, if the case was dismissed, and other adjudications. Finally, a dispositional outcome examines if the client went to placement, was placed on probation, was sent to the Department of Youth Services, as well as other unspecified outcomes. Sequences on these variables have been run to discover comparisons between race and these various outcome factors. Trends, outliers, and disparities will be further evaluated based on data results.

**William Steuk** (Dr. Marco Fatuzzo, Physics)

*An Examination on the Relationships between Collegiate Quarterback Statistics, NFL Draft Pick, and Future Productivity*

The scouting and drafting of quarterbacks are critical processes carried out by NFL franchises to invest in future success. By utilizing data from NFL quarterbacks drafted between 2000 and 2016, this study examines whether variables from a quarterback's college career and NFL combine trials correlate with draft position and overall productivity in the NFL. Defining these correlations highlights historical quarterback drafting tendencies and on-field results for NFL teams, in addition to presenting improved player success predictors for future draft classes. By applying an Ordinary Least Squares (OLS) multiple linear regression, several variables were found to be indicators of NFL success, such as cognitive exam scores and Heisman voting. Others, such as the 40-yard-dash and the broad-jump,

indicated a lower draft pick but showed little correlation with NFL productivity. Additionally, upon testing other linear regression models against the OLS regression, alternate models, such as the ridge regression, were found to more effectively predict future NFL success.

**Abby Rose & Ivy Lewis** (Dr. Tammy Sonnentag, Psychology)

*The Effect of Belief Superiority and Congeniality of Information on Tolerance*

When it comes to beliefs, people often inform themselves using sources congenial to their own view (Rodriguez et al., 2017). This phenomenon, called the congeniality bias, is characterized by a strong preference to read information that supports one's preexisting belief on a topic over information that opposes one's preexisting belief (Fischer et al., 2008). The congeniality bias could make compromise and communication between people of opposing beliefs more difficult by creating ideological echo chambers leading to polarization and extremity (Rodriguez et al., 2017). The resulting increase in polarization and extremity could have divisive consequences in society such as a more negative perception of others, lower tolerance of opposing ideas, and higher levels of belief superiority. The current study evaluates the influence of belief superiority on an individual's tolerance of others' beliefs as well as their perception of an author expressing their views, especially when the views expressed are uncongenial to the individual's preexisting belief. Due to previous findings of belief superiority predicting higher levels of hostility (Gregg & Mahadevan, 2014), it was hypothesized that individuals with high belief superiority would exhibit less tolerance and more negative perceptions of the author, especially if the author expressed views uncongenial to the individual's preexisting view. To test this hypothesis, the current study manipulated levels of belief superiority on the topic of prisoner voting rights in a sample of 119 undergraduate students, then presented participants with an article either congenial or uncongenial to their preexisting belief and measured the resulting perception of the author and tolerance of the author's belief. A manipulation check on belief superiority revealed that the manipulation failed, thereby making data on belief superiority less reliable. Results from two ANOVAs on tolerance of others' beliefs and perceptions of the author revealed no significant results. The lack of significant results may indicate that college students are more resistant to belief superiority, thus allowing them to have more tolerance towards others' beliefs and positive perceptions of others. However, these conclusions require further testing with more diverse samples and relevant topics for this population in order to confirm their validity.

**Danielle Stone** (Dr. Jaylene Schaeffer, Social Work)

*Relationship Between HIV Viral Load Rates and Specialty of Doctor*

This study describes the relationship between HIV viral load rates and the type of doctor a client sees. Clients enrolled in case management services at Caracole who had blood work taken to measure viral load rates from 2019-2021 were eligible to participate. Systematic random sampling is used in this study and the purpose is to learn more about the impact of a client's doctor on their HIV health and achievement of viral load suppression. Data was collected from a database called ETO that is used by Caracole. The following information was gathered, coded, and analyzed: age, race, gender identity, preferred language, sexual orientation, the date of client's most recent viral load, measurement of a client's most recent viral load, their primary care provider, the hospital system where they see an HIV specialist, and whether or not they see both an HIV doctor and PCP. Viral load suppression is one of the primary goals of HIV treatment because when a person is virally suppressed, they cannot transmit HIV to others. In this study, viral load suppression was defined as less than 20, meaning an individual has less than 20 copies of HIV per milliliter of blood.

**Claire Fischer & Pat Brown** (Dr. Tammy Sonnentag, Psychology)

*The Effect of Perceived Carbon Footprint and Environment Message Framing on Pro-environmental Attitude and Willingness to Engage in Mitigation Efforts*

According to the Intergovernmental Panel on Climate Change (IPCC), the negative influence humans are having on the environment is obvious, with the emissions of greenhouse gasses, particularly carbon, at the highest they have been in history (Pachauri et al., 2015). If strategies to mitigate the emission of greenhouse gasses are not extended past current efforts, by the end of the 21st-century, global warming will lead to a high risk of widespread and irreversible impacts (Pachauri et al., 2015). Previous research has shown that feedback, particularly social comparison feedback, about individuals' environmental impact can influence their experiences of guilt, support for a pro-environmental group (Mallet et al., 2013), and frequency of engaging in pro-environmental behaviors (Dupré & Meineri, 2016). Additionally, highlighting individuals' previous lack of pro-environmental involvement has been shown to increase their willingness to engage in current and future and pro-environmental behaviors (Gholamzadehmir et al., 2019). Finally, Davis (1995) demonstrated that framing environmental messages in terms of possible environmental

losses (compared to gains) increases individuals' likelihood of engaging in future pro-environmental behaviors. The current study examined how confrontation of individuals' environmental impact via false feedback on a carbon footprint quiz delivered in tandem with a statement positively or negatively framing how their future action or inaction will affect the environment influences feelings of guilt, pro-environmental attitudes, and willingness to engage in pro-environmental behaviors. It was hypothesized that participants told their carbon footprint was higher than average compared to their peers would report more guilt, a stronger pro-environmental attitude, and a greater intent to participate in pro-environmental behaviors than participants told their carbon footprint is lower than average. Additionally, it was hypothesized that participants who read a negatively framed environmental message would report more guilt, a stronger pro-environmental attitude, and greater intent to participate in pro-environmental behaviors than participants who read a positively framed message. Finally, it was hypothesized that participants who read a negatively framed environmental message would experience more guilt, a stronger pro-environmental attitude, and a greater intent to participate in pro-environmental behaviors when their individual carbon footprint was described as higher than average, rather than lower than average. 128 undergraduate students were recruited to participate in the study. Participants were randomly assigned to one of four conditions, reflecting a 2 (Carbon Footprint False Feedback: higher than average or lower than average) x 2 (Environmental Message Frame: positive or negative) between-subjects design. Participants were asked to complete the carbon footprint quiz on a computer and were told the quiz would accurately calculate their individual carbon footprint score. After completing the quiz, participants were randomly assigned to receive false feedback describing their carbon footprint as either higher or lower than other students who had completed the quiz. Participants also read one of four possible statements which described how their future action or inaction will affect the environment; framed either in terms of environmental losses or gains. Subsequently, participants completed the feelings of guilt, pro-environmental attitude, and pro-environmental behavior measures. To test the hypotheses, a series of 2 (Framing: positive vs. negative) x 2 (Carbon Footprint Feedback: higher than average vs. lower than average) between subject ANOVAs were conducted on guilt, pro-environmental attitude, and intent to participate in pro-environmental behaviors. The analyses did not reveal any significant effects, but there is a small, non-statistically significant change in intent to participate in pro-environmental behaviors between participants who read a negatively or positively framed environmental message and were told their carbon footprint was lower than average. This could indicate a place for future research to focus on and operationalize stronger. Although the results did not provide support for a relationship between carbon

footprint quiz feedback or environmental message framing and guilt, willingness to engage in pro-environmental behaviors, or pro-environmental attitude, the results to contribute to the growing body of knowledge on garnering support for a pro-environmental lifestyle and provide meaningful directions for future research.

**Kiera Wolkins & Aubree Herman** (Dr. Thomas Wagner, Communications)

*Climbing the Popularity Ladder: Social Comparison and Image Fixation on Instagram*

This study expanded upon research about image fixation on Instagram, to examine the most prevalent online behaviors displayed by high and low image fixators. 161 college students were asked about their comparison tendencies, image building techniques, and profile differentiation efforts. Varying types of conduct were identified through the analysis of these qualitative answers. Chi square tests helped to pinpoint the most frequent behaviors amongst participants with high and low image fixation scores. Those with high image fixation reported comparison primarily on the basis of feedback received, appearance, and the aesthetic of their content. Participants with low image fixation commonly identified themselves by their infrequent posting habits and the activities they post. When building a personal image online, high fixators once again focused on their appearances and the creative elements of their profiles. Participants at both ends of the image fixation scale showed a shared desire to represent themselves through what they are passionate about. Social media platforms, such as Instagram, allow users to not only curate their physical appearance and personality, but also clearly display the level of approval certain characteristics garner through “likes” and followers. This ever-changing guide to what is trending encourages online participants to not only represent their true selves, but to adjust their content to seek the best feedback possible. Awareness of how people use the different functions on social media platforms is crucial to developing methods for combating potential negative effects of image fixation.

**Madeleine Scanlon** (Dr. Jaylene Schaeffer, Social Work)

*Oyler High School Seniors rate their feelings about college preparedness before and after attending College 101 sessions*

Students at Oyler High School are currently faced with the challenging transition from high school to college matriculation. To make this transition easier, student interns at Oyler



created the College 101 group to discuss key skills needed for college success. This study aims to determine whether the College 101 group was effective in increasing students' feelings of preparedness for college. A sample size of four seniors was chosen to participate in the College 101 group because they are planning on going to college and will most likely matriculate. To test the hypothesis, A survey was given to each individual participating before attending the College 101 group sessions, and the same survey was given to the same individuals after attending the College 101 group sessions.

**Jonathan Bernard** (Dr. Tammy Sonnentag, Psychology)

*Social Psychological Analysis: Factors Explaining How Conspiracy Theories Affect Attitudes Toward COVID-19*

When the novel viral infection COVID-19 was identified in the United States, it was necessary for the government to establish regulations to prevent the spread of the virus. However, the emergence of various conspiracy theories made enforcement of regulations difficult. This paper provides three social psychological explanations for why individuals may support conspiracy theories regarding COVID-19 and, therefore, be less compliant with government regulations to control and prevent the spread of the virus. Specifically, the current paper applies empirical social psychological literature to explain how three concepts – self-efficacy, confirmation bias, and mistrust – contribute to explaining individuals' belief in misinformation related to COVID-19. The application of three social psychological concepts (and associated empirical literature) demonstrates the value of social psychology to understanding individuals' reactions to real-world events and explaining their behaviors in response to the current health pandemic.

**Chaeremon Minnis & Evan Whitford** (Dr. Adam Bange, Chemistry)

*Analysis of Heavy Metal Samples using Flame AA and ICP*

The purpose of this experiment is to find a way where we can help limit the risk of heavy metal toxicity which has being a topic of great concern to both the environment and to our health as humans. We will be closely looking for and trying to detect the elements Copper (Cu), Cadmium (Cd), Manganese (Mn) and Lead (Pb). Heavy metals disrupt metabolic functions in two ways: They accumulate and thereby disrupt function in vital organs and glands such as the heart, brain, kidneys, bone, and liver. They displace the vital nutritional

minerals from their original place, thereby, hindering their biological function. They are also bad for the environment as they contaminate our waters and soil. The goal of this research is to develop an environmentally friendly cost-effective electrochemical sensor that detects the presence of Cadmium, Copper, Manganese and Lead. We will be using the Atomic Absorbance spectroscopy (AAS) and Inductively Coupled Plasma- Atomic Emission Spectroscopy (ICP-AES) as our detection methods for the overall efficacy and percent recovery CPE for Pb, Cd, Cu and Mn in a single sample.

**Camryn Backman** (Dr. Tammy Sonnentag, Psychology)

*The effect of photographs on the narrative believability of positively and negatively framed stories*

A vast number of news stories, both accurate and inaccurate, are published in print or digital form each day. Consequently, understanding what attracts readers to particular stories and what makes them appear believable is incredibly important. A common journalism phrase reflects, "If it bleeds, it leads," which means that salacious, oftentimes negative, news stories tend to effectively grab readers' attention and engage them with content (Serani, 2011). Recent news stories appear to follow this philosophy, as they tend to be overwhelming negative, depicting crime, terrorism, economic turmoil, and governmental disarray (van der Meer et al., 2018). Relatedly, news stories accompanied by disturbing, rather than innocuous, images tend to promote readers' completion of articles (Knobloch et al., 2003). Consequently, when the news media frames (i.e., emphasizes or deemphasizes certain aspects of a story) information negatively, they appear to effectively engage readers and sustain their attention (Entman, 1993; Jackson, 2016). Although the news media may have strategies that engage readers with content, the extent to which the stories are believable and, therefore, seemingly trustworthy is largely unknown. The current study examined whether story framing (i.e., negatively or positively) affects the believability of news articles, and if the presence of a photograph contributes to the believability. A total of 103 participants were recruited to participate in the study. The study was conducted as a 2 (Photograph: Present or Absent) x 2 (Framed Story: Positive or Negative) between-subjects design, where participants were randomly assigned to one of the study's four conditions. Participants read a positively or negatively framed news article about an immigrant's experience with Customs Border Patrol, where a photograph was either present or absent within the story. All participants then completed a measure of narrative believability (Yale, 2013). Data was analyzed using a 2 x 2 between-groups ANOVA and

results revealed a significant main effect of story frame on Narrative Believability, revealing that negatively ( $M = 4.70$ ,  $SD = .42$ ) compared to positively ( $M = 4.36$ ,  $SD = .50$ ) framed stories were viewed as more believable (see Figure 1). The interaction between the Photograph and Framed Story was not significant,  $F(1, 91) = 12.13$ ,  $p = .001$ . The value of these findings will be discussed and have implications for how news media may present accurate information to create more believable content to maintain reader interest and engagement .

**Carolanne Zelis** (Dr. Alex Scrimshire, Management & Entrepreneurship)

*An Attitude of Gratitude: The Mediating Effect of Organizational Gratitude Between Professional Identity and Organizational Citizenship Behavior*

Research shares that gratitude, a trait of active appreciation, can arise from within or from others. When gratitude arises externally, theory describes gratitude as a motive for individuals to engage in prosocial behavior as an act of thankful reciprocation. Our research expands this idea by transferring the concept of gratitude to the workplace. Similar to general gratitude, organizational gratitude is a form of gratitude relating to an employee's habitual appreciation for their organization. Across two studies, we analyzed two samples, where we found that organizational level gratitude positively mediates the relationship between professional identity and organizational citizenship behaviors (OCBs). Additionally, we discovered that organizational culture moderates this relationship such that when employees perceive a strong positive culture, their levels of professional identity, organizational gratitude, and OCBs are strengthened – creating prosocial behaviors for both the employer and the employee.

**Kayla Howell & Ali Richardson** (Dr. Mollie McIntosh, Biology)

*Assessment of Microplastics in the Mill Creek Watershed, Cincinnati, Ohio*

Microplastics are fragments of plastic less than 5 millimeters in length. Primary microplastics, intentionally produced pieces for commercial use, and secondary microplastics, produced from degradation of macroplastics, can be introduced via multiple pathways into aquatic environments. While most studies have focused on marine systems, microplastic pollution is also a growing concern in freshwater, where little is known about potential impacts. Wastewater treatment plants are a likely source of microplastic pollution

due to the consolidation of wastewater from many sources and subsequent release of effluent into streams and rivers. The objective of this study was to assess microplastic abundance in stream samples upstream and downstream of a wastewater treatment plant. Field samples and controls were collected from two locations, one above and one below a wastewater treatment plant, along the East Fork Mill Creek located near Cincinnati, Ohio, in October 2020. Field samples were also compared to laboratory water samples, including deionized, filtered deionized, tap, and bottled water. For each treatment, three samples were collected and processed in the laboratory through a filtration device, then counted and identified using a dissecting microscope. Results indicated the presence of microplastics in both field and lab samples. The concentration of microplastics was significantly greater in tap water compared to all analyzed samples. In the field, downstream samples generally had a higher microplastic concentration compared to upstream. The type of microplastics was variable across sites. Future work will expand the number of sampling locations and increase sample size to better estimate the extent of microplastic pollution in this watershed.

**Kendra Cashman** (Dr. Jaylene Schaeffer, Social Work)

*Access to Safe Harbor: Juvenile Justice System and Human Trafficking*

Youth under the age of eighteen in Ohio, and across the United States, are able to access Safe Harbor Diversion Plans as an alternative to criminal sentencing if their charges are found to be related to their status as a survivor of human trafficking. The study examined the demographics of clients at the Hamilton County Public Defender Juvenile Division (HCPDJ) Social Work Department identified as at-risk for human trafficking and how those demographics relate to who pursues and is found eligible for Safe Harbor. Youth are identified as at-risk by social workers and attorneys, given their social histories of exploitation and relationships with traffickers. The study was conducted as a secondary analysis of sixteen youth identified by the HCPDJ social work department. Client demographics and case reports were reviewed in order to compile relevant data. Results showed that only twenty-five percent of youth surveyed pursued Safe Harbor and only half of them were granted Safe Harbor status. Those who were white and experiencing sex trafficking were more likely than black youth experiencing labor trafficking to be eligible for Safe Harbor. The research and findings are limited by the small, niche sample size, but could be beneficial in providing a general overview of the relationship between human trafficking and criminal charges. The study was conducted to provide attorneys at HCPDJ a

better understanding of the primary demographics of at-risk youth of human trafficking. It provides clarity around the demographics of clients who pursue and are granted Safe Harbor Diversion Plans, which can guide social workers and attorneys at HCPDJ in the future.

**Amy Steeno & Molly Baker** (Dr. Tammy Sonnentag & Dr. Heather McCarren, Psychology)

*How Unique Benefits and Salary Influence Recent College Graduates' Perceptions of the Workplace*

Job descriptions are one of the first items that prospective applicants see, making it important that companies use the descriptions to attract qualified applicants. With 87% of college undergraduates entering the job market every year, including unique benefits may serve to entice applicants (Employment Rates, 2020). Applicants that are offered unique benefit packages, perceive the employers as having better employer image, greater attraction, and job pursuit intentions (Pytlovany, 2019). For this reason, the current study examined whether the presence (compared to the absence) of a unique benefits package made a job description more appealing to potential applicants regardless of the salary level presented. 119 students participated in a 2 (Unique benefits package: present vs. absent) x 2 (Salary: high vs. low) between-subjects design where they were assigned to one of four conditions in which they read a description reflecting a low or high salary job that does or does not include a unique benefits package. All participants then completed three questionnaires assessing organizational attraction, job pursuit intentions, and of employer image. Results revealed that job descriptions containing a unique benefits package were perceived as more attractive, yielded greater job pursuit intentions, and better employer image regardless of salary.

**Maureen Dailey** (Dr. Alan Jin, Business Analytics and Information Systems)

*Using Social Media to Improve Product/Service Quality*

Today's customers make numerous, instant, open comments, positive or negative, on the quality of the products or services they have purchased, across a wide range of social media platforms. This research project aims to develop an evidence-based, comprehensive understanding of the role of social media in today's quality management. Specifically, the research will address how it has been, and could be used to improve product or service

quality and identify the strength and weakness. This study will also provide the organizations a relatively unified framework to help organizations incorporate social media in their quality management practices. Some key research questions include (but are not limited to): (1) What types of organizations found social media helpful in their quality management? Which types of industries, products or services does social media benefit? At what stages of quality management, (product design stage, production stage, or post-sale stage) is social media most effective? (2) What types of social media are most beneficial to the organizations' quality management? What are the reasons? (3) What factors (e.g., industries, product/service types, cultural factors) determine the usefulness of social media in improving quality for an organization? (4) What are the specific approaches utilize social media to manage and improve the quality of an organization's product/service? (5) What are the benefits and risks of pitfalls? (6) What are the challenges and obstacles? How do they deal with those challenges and obstacles? (7) What are the strength and weakness of using social media in quality management, and how does this strategy compare to a more traditional approach? A qualitative research approach is therefore best suited to gain broad insight into this phenomenon. The findings contributes to the researchers, practitioners and educators in operations management, as well as the software (and other technology) designers.

**Sydney Harlow & Rachel James** (Dr. Mollie McIntosh, Biology)

*Assessment of E. coli levels in relation to habitat type and wastewater treatment plant location within an urban watershed*

*Escherichia coli* can be a useful way to monitor water quality as fecal indicator bacteria. While *E. coli* exists readily in nature alone, presence of *E. coli* can be an indication of fecal contamination, whether human or animal, and can ultimately indicate the presence of pathogens dangerous to human health. The objectives of this study were to determine whether *E. coli* levels varied between (1) pool and riffle habitats, and (2) stream locations upstream and downstream of a wastewater treatment plant in East Fork Mill Creek, Cincinnati, Ohio. Water samples were collected in pool (n=5) and riffle (n=5) habitats from both upstream and downstream locations in October 2020. Samples were plated in the lab using 3M Petrifilm Coliform Count plates to isolate *E. coli* bacteria from the water samples. Plates counts for *E. coli* colony growth were analyzed using two-way ANOVA and multiple linear regression. Preliminary results indicate that *E. coli* abundance observed downstream was significantly greater than upstream of the wastewater treatment plant; whereas, *E. coli*

abundance between habitats was not statistically different. Future work will include additional spatial and temporal collections throughout the watershed. This preliminary study will provide a foundation for further understanding *E. coli* growth within urban streams.

**Adams Freeman** (Dr. Jaylene Schaeffer, Social Work)

*Impact of the COVID-19 Pandemic on Housing Services for People Living with HIV*

At the end of 2018 an estimated 1.2 million people in the United States were infected with HIV ("HIV Basic Statistics", 2020). HIV/AIDS has disproportionately affected low-income and vulnerable populations. Due to this, HIV resource agencies, have incorporated a variety of services to ensure that people living with HIV (PLWH) have the resources they need to continue to manage their HIV health effectively and without barriers. One of these services are housing services such as rental assistance, utility assistance and HIV homes. With this in mind, it is important to consider how these services have been impacted by the ongoing COVID-19 pandemic. The purpose of this research is to examine the impact that COVID-19 had on housing services at Caracole. In order to complete this task, client data from an annual psychosocial assessment will be pulled for variables such as amount of rental subsidy spent on client, amount of utility assistance spent on client, and whether or not they are housing stable. Additionally, data on the number of clients utilizing utility and/or rental assistance is pulled. The results from this research are limited in their significance, as only a small portion of Caracole client data was able to be pulled within the time frame of one semester. Results from analyzing client data pulled found that there has been an increase in utility and rental assistance requests from clients post-COVID, in comparison to pre-COVID data.. Additionally, 100% of clients were housing stable both in pre and post COVID data. Discussion on these results indicated that housing services were in higher demand due to the economic impact of COVID 19. Continued research on the long term use of utility and rental assistance is needed to fully understand the long term economic impact that COVID-19 had on low income and high risk populations, such as PLWH.

**Olivia Biddle** (Dr. Kathryn Morris, Biology)

*Soil Stabilization by Streptomyces Bacteria*

*Streptomyces* bacteria are similar to fungi in structure, and fungi aid in the formation of

soil aggregates, but no one has yet explored the potential of *Streptomyces* to stabilize soil. To determine the effect of *Streptomyces* on the formation of water stable soil aggregates, *Streptomyces* bacteria were first isolated from field collected soil, and one isolated colony was used to make a liquid culture. The culture was then distributed, in four different concentrations, to Petri dishes containing fine soil (<212  $\mu\text{m}$ ), and placed in the incubator (30 °C) for a month. During that month, I added water to plates several times to maintain their initial weight. I then quantified total bacteria and *Streptomyces* in the soil by doing viable plate counts onto LB and Actinomycete Isolation Agar, respectively. The distribution of soil aggregates in each dish was measured using a wet sieving technique, and the percentage of total water stable aggregates. Aggregates with 1-2 mm diameter were significantly more stable than control treatments in treatments receiving full and half doses of *Streptomyces*. There was not a linear relationship between *Streptomyces* number and stability of 1-2 mm aggregates. *Streptomyces* may be important for stabilizing intermediate sized aggregates in natural environments.

**Brianna Lyons** (Dr. Heidrun Schmitzer, Physics)

#### *Strength of Materials & Surface Roughness*

The mechanical behavior of a material is determined by its properties. The relationship between stress and strain is such a property. By applying tension stress to a material, we can determine its Young's modulus, i.e. its elastic behavior at small stresses, and its tensile strength, i.e. the stress at which it fractures. The Young's moduli and the tensile strengths of several samples, were experimentally determined. Since the straining of the material causes its atomic planes to shift, the surface roughness of the sample increases with increasing strain. This increase in surface roughness was measured as well. Similarly, by applying compressive stress to materials, their compressive strength can be determined.

**Alexa Ollier** (Dr. Richard Polt, Philosophy)

#### *Prejudice in the Canon: Putting Hegel's Race Theory in the Context of His Philosophy of History*

Hegel's *Reason in History*, written in 1837, presents readers with his philosophy of history. Through history, he believes we are able to witness humanity's development in realizing the divine end intended by the Judeo-Christian God. His account of history is dynamic as it



includes the many components necessary to the actualization of the divine on earth, the key component being Spirit. A society that achieves Spirit in the way Hegel prescribes will be able to actualize the divine end. In Hegel's logic, a hierarchy can be ascribed, following from top to bottom: Spirit, Nature, Man. However, Hegel's philosophy of history garners suspicion once his race theory is considered. He divides humanity into four "races": African, East Asian, American, and European. His divisions are not only categorial but are also hegemonic; Europeans are the top race with East Asians, Americans, and Africans following respectively. Questions of the interplay of his race theory with his philosophy of history quickly haunted my mind.

To add to my suspicion, he harshly critiques Africa in a series of lectures, entitled *The Philosophy of History*. Through addressing his comments on Africa, we recognize his racism present there to question the handling of him as an accepted, canonical author. [1] (#\_ftn1) His attack on Africa ultimately asserts that Africa lacks Spirit. He begins his commentary on Africa by assessing the geography and this is the means through which he initially posits their lack of Spirit. He identifies two types of land in which it is nearly impossible for Spirit to manifest: Frigid and Torrid zones. Since Africa can be categorized within the latter group, this indicates that Nature overpowers and inhibits the development of Spirit. The hierarchy of Spirit-Nature-Man instilled by Hegelian historical logic begins to erode. Also, Hegel offers religion as a way to actualize Spirit. He generalizes all African religions and traditions into one sole religion which he refers to as "sorcery." Part of why he ascribes such a disrespectful title is because this so-called sorcery posits all the power within man and symbolic objects rather than in a Judeo-Christian God. Africa reversed the Spirit-Nature-Man chain through the importance they placed upon both man and nature instead of spirit. Hegel believes Africa corrupted the "formula" necessary for the movement of history and the realization of the divine, which is the ultimate purpose of humanity. Thus, from Hegel's point of view, Africa neglects Spirit and the divine, and can be aptly understood as a mere 'threshold of history.'

While it is hard to say whether Hegel's racism noticeable in *The Philosophy of History* distorts his work in *Reason in History*, the possibility cannot be denied. Additionally, the views forwarded by Hegel about Africa are not new. Dr. Li-Hsiang Rosenlee addresses the systematic exclusion of African and Asian voices in philosophy through her article "A Revisionist History of Philosophy." Philosophy as a traditionally European, male-dominated field has a plethora of diversity issues, both rooting from and perpetuated by the canonical texts. [2] (#\_ftn2) By complementing the often-overlooked race theory of Hegel with his philosophy of history, we challenge the pedagogical undertaking of studying any canonical

philosopher in any setting to include understanding of the work(s) selected for study as well as addressing any prevailing bias of the philosopher and their philosophy, especially as it pertains to matters of identity. Through such awareness, there is hope for philosophy to overcome its prejudices and become more inclusive.

[\[1\] \(#\\_ftnref1\)](#) Canonical texts are the writings recognized as fundamental to the study as philosophy.

**Liam Rocks** (Dr. Jaylene Schaeffer, Social Work)

### *Affordable Housing Needs Assessment*

With growing support over the Affordable Housing Trust Fund ballot initiative in Cincinnati, this research assignment looks at the state of affordable housing from the perspective of residents. This project took an environmental survey of the 248-unit Arts Apartments complex in the West End neighborhood. Residents were asked a series of questions to determine the safety, health and condition of their living environments, as well as if they had any interest in organizing residents at the Arts Apartments. This data was then taken and analyzed to find any common patterns and other statistics to help explain the situation at the Arts Apartments. With a growing housing crisis, affordable housing residents are often forgotten, and this research assignment looks to highlight their voices and show the reality of affordable housing units in Cincinnati. The Arts Apartments offered an interesting case study in affordable housing and the residents responses surprisingly paint a hopeful future for affordable housing in Cincinnati.

**Kai Little-Tree Holston** (Dr. Jaylene Schaeffer, Social Work)

### *Academic Performance During Remote Learning: A Look at How Student GPA's Have Changed During COVID-19*

COVID-19 has affected everyone's lives differently, including students. Many schools have been doing remote learning this year because of COVID-19. Remote learning has caused a huge learning curve for both students and teachers. Many students have struggled to go from learning in a classroom to learning through a computer screen; thus greatly affecting students' academic performance. This study examines the change in high school GPA for senior students from June 2020 to February 2021. I collected data on 30 students at Oyler School in Cincinnati, Ohio. I examined data that was already collected on the students

including GPA at the end of June 2020, GPA at the end of February 2021, race, and gender. This research project looks at the relationship between grades for students at the end of June 202 and the end of February 2021, while they have been remote learning.

**Ashley Becker & Matt Benedek** (Dr. Stephen Mills, Chemistry)

*Characterization of Proteins with Unknown Functions*

To predict the function of these uncharacterized proteins, multiple *in silico* data searches and algorithms will be employed order to identify structural and sequential features shared between the uncharacterized proteins and enzymes with known functions. The data bases and programs that will be used for this in silico piece of the project are LabelHash, Molitmate, Chimera, BLAST, Pfam, and Dali. Each of these individually contributes unique information about how the protein with unknown function relates to those of known function and allows for a more specific hypothesis of the protein's true function. Following in silico analysis and the prediction of protein function, molecular docking *via* Autodock Vina provides insight into what substrate should be tested with the protein of interest in the wet lab. After prediction has been made regarding the expected function of the new protein, the protein then will be expressed and purified in lab. Following expression and purification, kinetic assays will be used to confirm or deny the predicted enzymatic function.

**Grace Dulle** (Dr. Jaylene Schaeffer, Social Work)

*Victim's Assistance Liaison Unit COVID Client Satisfaction Survey*

Over the last year, due to a global pandemic, many agencies and businesses have undergone numerous service changes. These services changes include, and are not limited to, virtual services known as "Telehealth". At the Victim's Assistance Liaison Unit (VALU) in the Cincinnati Police Department, many services including grief support groups as well as individual counseling sessions were switched to appointments set up on Zoom. The purpose of study as presented is to obtain an understanding of how clients within the Victim's Assistance Liaison Unit perceive the quality of services they are now receiving as a result of COVID. In order to assess this understanding, a client satisfaction survey was administered by the researcher with questions in regards to feelings towards services in general and feelings on quality of services in COVID vs. before COVID. Participants were 11 victims of

crime who regularly access services at the Victims Assistance Liaison Unit. One participant was excluded from data analysis due to non-applicable responses. Results will be determined via chi-squared test.

**Josephine Pyles** (Dr. Hanna Wetzel, Biology)

*Exploring cocaine metabolism and excretion in the presence of the fab fragment of an anti-cocaine monoclonal antibody*

In the past decade, deaths due to cocaine overdose have risen over 400%, with cases increasing drastically, especially during the COVID-19 pandemic. Yet, there are still no FDA-approved medications to treat cocaine use disorder. To combat this, an anti-cocaine monoclonal antibody (h2E2) is in the advanced stages of pre-clinical development. h2E2 has been shown to bind cocaine with high affinity *in vitro*, and to sequester cocaine in the plasma in order to prevent it from crossing the blood-brain-barrier in mice (Wetzel et. al 2017). A previous study has shown that h2E2, alters the urinary clearance of cocaine (Marckel et. al 2019), which could confound clinical trials. Since the fab fragment of this antibody has potential to be an overdose rescue drug, it is important to examine the effects of the fab fragment of h2E2 on cocaine urinary excretion. The purpose of our study is to examine whether the presence of cocaine effects the excretion rate of the fab portion of h2E2, and vice versa, in rats. First, we constructed a two-compartment model of cocaine and fab's expected rates of excretion. Then, 12 rats (n=6 per group) were placed in metabolic chambers and injected with fab and vehicle, cocaine and vehicle, and cocaine+fab together. We collected urine samples every 3 hours for 12 hours. We then aliquoted the urine samples to be analyzed by ELISA (to determine the concentration of fab) and LCMS (to determine the concentration of cocaine). Future studies should utilize these concentrations to validate the original mathematical model.

**Jacara Betts** (Dr. Jaylene Schaeffer, Social Work)

*An analysis of the impact that family size has on a family's requested food pantry items*

This study looks at if there is a relationship between a family's size and the items, they prefer from a food pantry. The sample for this study consisted of the clients of Community Matters that use the food pantry. Community Matters is a non-profit organization that provides services to help remove barriers to success in Lower Price Hill. To collect the data

for this study, a survey was delivered with the pantry orders to all clients who received food from the pantry. The survey was consisted of question that address family size, how much of their pantry order they currently use, and what items they would prefer to see. Once the surveys were completed, they were mailed back to the organization for collection. The purpose of this study is to help specifically Community Matters, but also other food pantries, make the most of their orders, so that food is not wasted on either side. It is also meant to see if there is connection between what foods families want in their pantry orders and the family's overall size and makeup.

**Regina Rancourt, Olivia Wakefield, Alex Carroll, Maddie Asbridge** (Dr. Polina Bespalko, Music & Theatre)

### *2021 Spring Piano Recital*

This spring semester, students from Xavier's Department of Music and Theater presented one of the university's first in-person performances since the beginning of the COVID-19 pandemic. Music students in the past have held joint student recitals every semester, showcasing various instruments and their solo repertoire. But the performance in Gallagher Student Center on evening of March 13th, 2021 featured both solo and collaborative piano pieces performed by Dr. Polina Bespalko's piano studio. These pieces were thoroughly studied throughout the Fall 2020 semester through the beginning of the Spring 2021 semester. The program began with Claude Debussy's Reflets dans l'eau performed by Regina Rancourt, Johann Sebastian Bach's English Suite No.2 in A Minor performed by Olivia Wakefield, Frédéric Chopin's Nocturne No. 1 in C Minor, Op. 48 performed by Alex Carroll, Aleksandr Skryabin's Prelude No. 4 performed by Maddie Asbridge and Camille Saints-Saens' Carnival of the Animals (arranged for piano duet) performed by Olivia Wakefield and Regina Rancourt. This project allowed members of the Xavier community to attend a live performance—many for the first time in almost a year. For those in the audience (and for the performers themselves), the experience was somewhat unreal and certainly a breath of fresh air; it was the perfect way to welcome the forthcoming spring and to celebrate the hopeful beginning of the end to this global pandemic.

**Tyler DiPetrillo, Mio Kamioka, Brian O'Dell, Zach Smith, Colleen Spolar & Riley Whalen** (Dr. Mollie McIntosh, Biology)

### *Macroinvertebrate community structure in relation to habitat and location within an*

## *urbanized stream*

Aquatic macroinvertebrates are good indicators of water quality because they are ubiquitous to aquatic habitats, fairly sedentary, and have a wide range of tolerance to multiple disturbances. One such disturbance, can be wastewater treatment plant effluent commonly released into rivers and streams. Effluent can have negative impacts on aquatic ecosystems altering the chemical, physical and biological integrity. The main objectives of this study were to assess macroinvertebrate abundance and diversity between (1) locations downstream and upstream of a wastewater treatment plant and (2) riffles and pool habitats within an urbanized stream. This study was conducted in the East Fork Mill Creek, located within the greater Cincinnati, Ohio, region in October 2020. At each location, macroinvertebrate samples (n=4) were collected from the benthic substrates within each habitat, using a standardized kick-net method. Preserved samples were sorted using a dissecting microscope and macroinvertebrate identifications were made to the family level. Results from this study indicate no significant difference in macroinvertebrate abundance or Shannon Weiner diversity between upstream and downstream sites as well as riffle and pool habitats. There was a significant difference in taxa richness in the upstream site compared to the downstream site. Higher taxa richness in the upstream habitats could be an indication of better water quality and habitat diversity compared to downstream. Future research will expand collections and sample size to better investigate spatial and temporal variation within the watershed, increasing our understanding of impacts with this urban watershed.

**Andrew LeBlanc** (Dr. Richard Mullins, Chemistry)

*The Total Synthesis of Inuloxins A and B Through a Novel Stereodivergent Synthesis of Bicyclic Lactones.*

*Inuloxins A-D* were discovered in 2012 by Andolfi and Coworkers and has promising leishmania resistance and antiameobic activity. However, *inuloxins A-D* have never been synthesized. We plan to synthesize *inuloxins A* and *B* through a novel methodology. Our proposed methodology allows for a generic stereodivergent synthesis of bicyclic lactones. Through this methodology, we will be able to selectively form all 8 lactone stereoisomers. Beyond this method development, we plan to apply it to the total synthesis of *inuloxin A* and *inuloxin B*. Along with our methodology, we plan to perform multiple fascinating transformations. Of specific interest is the stereospecific Suzuki reaction and a late-stage allylic oxidation. Our initial results towards these goals will be presented.

**Thomas Grandon** (Dr. John Fairfield, History)

*Avondale: Storied Past, Uncertain Future*

Where is the line between healthy redevelopment and gentrification? What if the developers are a world-class hospital and the largest educational attraction in the city? We approach these questions and more with our research on Cincinnati's Avondale neighborhood. Children's Hospital is nearing the end of an expansion project which will introduce a revolutionary critical care building unlike anything else in the region. Meanwhile, the hospital's neighbors experience infant mortality rates far worse than the national average. Many Avondale residents believe continued development threatens the future of their community.

**Kelly DeLano** (Dr. David Gerberry, Mathematics)

*Modeling the Transmission of COVID-19 in Relation to Behavioral Response*

This project analyzes the spread of the COVID-19 virus throughout a population. We created an SEAIRS model to quantify the number of susceptible, exposed, asymptomatic, infectious, and recovered people in the population. After creating a general model, we incorporated behavioral response where the population acts to reduce transmission as the pandemic becomes more severe. Next, we recognized that the prevalence on one specific day doesn't impact the behavioral response on that day, and instead a few days later, so we implemented a "lag function." With these assumptions the mathematical model produces the multi-peak behavior that has characterized the COVID pandemic.

**Stephen Prevoznik** (Dr. Shannon Byrne, Classis & Modern Languages)

*Women in Livy's Ab Urbe Condita or "From the Founding of the City" and Tacitus' Annals*

Although often neglected in Roman literature, women play important roles where they do appear. This is especially true in Livy's history called the *Ab Urbe Condita* or "From the Founding of the City" and Tacitus' work the *Annals*. For reasons I will clarify more in my presentation, Livy uses women as examples. Some are examples that the readers should follow. Lavinia, Lucretia and the Sabine women all exemplify something good. Lavinia is noble in her aim, Lucretia is a model for chastity, and the Sabine women show the value of

harmony. Livy also presents women who are bad examples. Tullia is overcome by the vice of ambition, and this eventually leads to the end of the monarchy in Rome. Tarpeia shows what happens when women are influenced by nefarious men. Livy also includes women that are impossible to categorize, like Tanaquil. She influences the men around her and is very outspoken. This is due to her Etruscan heritage. Because she is not Roman, it is unfair to judge her based on Roman values. In contrast, Tacitus uses women to characterize the men with whom they associate. Most women make the emperors look bad. Livia weakens the character of Augustus and puts Tiberius on the throne. Agrippina the Younger tells Claudius what to do and is so influential that prisoners paid respects to her as if she were an emperor. Octavia is killed by Nero after she is accused of adultery. She was innocent of the crime, and Nero comes off as a tyrant for her murder. Agrippina the Elder is both good and bad. She is portrayed as the noble wife of Germanicus. Their relationship makes Germanicus look good. However, she is also used to make Tiberius seem weak and angry. By looking at the way the authors use women, their motives come to light. Livy uses women as examples of the virtues that made Rome powerful and the vices that were causing it to decline. Tacitus does everything he can to show how bad the emperors were, and therefore he uses women help him do that.

**Annie Tobler** (Dr. Jaylene Schaeffer, Social Work)

### *Gay-Straight Alliances in Schools*

Less than 16% of high schools in the United States have a GSAs for students (GLSEN, 2020). GSAs, known as Gay-Straight Alliances or Gender and Sexuality Alliances, are school based organizations that work to provide LGBTQ+ students with support, comfort, and safety. GSA groups offer LGBTQ+ students a place to safely explore and express their gender and sexual identities. The presence of GSAs in schools is associated with significantly lower levels of youth's self reports of homophobic victimization, fear for safety, and hearing homophobic remarks. Analysis provides evidence to support GSAs as a means of protecting LGBTQ+ youth from school-based victimization. The purpose of this research is to examine the student's self report of their experience at Norwood's Gay-Straight Alliance. In order to complete this task, middle and high school students who have attended the GSA were invited to fill out an anonymous questionnaire regarding their feelings, feedback, and improvements for the future of the program. The results from this research are limited in their significance, as only a small portion of Norwood middle and high school students have attended the gay-straight alliance and were able to complete the questionnaire in time.



Results from analyzing client data found that 100% of respondents felt safe during the GSA meetings and 100% absolutely agreed Norwood should continue to have a GSA. Continued research on the specific activities, programs, and benefits is needed to fully understand the long term impact that Norwood's GSA has on LGBTQ+ students.

**Megan Scharrer** (Dr. Jaylene Schaeffer, Social Work)

*Satisfaction of Emergency Assistance and Health Promotion in Hispanic/Latino Agencies*

When Hispanic/Latino immigrants come to the United States, they often need bilingual social services to help them settle into the country. They need services to help find housing, jobs, transportation, clinics and medical specialists, and notaries. The migrants will go to bilingual social services to receive these and these services I centered in practices of cultural humility. It is important to know whether the services these agencies are providing are helping. This research is focused on the satisfaction of services of Latino/Hispanic immigrants at Su Casa Hispanic Cent. The clients were asked four questions to determine if they were satisfied with the service, the agency, if they would recommend the agency to other people. All clients appeared to be satisfied with the services received and would want to continue utilizing the agency. They as well would recommend Su Casa to other community members. Although high results, the survey had some limitation as it was asked orally, which only aloud confidentiality and not anonymity.

**Xavier Escalante** (Dr. Saurav Pathak, Entrepreneurial Studies)

*Exploring the Impact of Emotional Intelligence on Entrepreneurial Development and Choice*

Emotional Intelligence (EI) has been a growing area of interest not only in the field of psychology but also in the world of business and in particular management. Generally, EI is linked to our interactions with people however it has also had connections to career choice and career adaptability and through our research, we hope to find and explore how EI affects the growth and development of Entrepreneurial Behavior. Since Entrepreneurship has been considered to be the result of a collaboration between individual, social and environmental factors we believe that there is almost a necessity for high EI when it comes to Entrepreneurial Behavior. The purpose of this study is to examine if this link is present and to do so we will examine numerous articles that discuss the two topics.

**Munachimso Anachebe** (Dr. Justin Link, Physics)

*Foldon Theory Experiment on Cytochrome C Protein and its Mutants Using Foldit*

Protein folding study is an interdisciplinary field that relates how proteins fold and how misfoldings due to mutations cause and are linked to various genetic conditions. The mechanism of protein folding was examined using horse heart cytochrome c (PDB: 1HRC). Foldit Standalone software was used to analyze and determine the free energies of the native protein and its mutants. Free energy was used to determine the relative stability of the protein and the mutants created. Each mutant possessed a specific point protein mutation within specified regions of the protein (foldons). These mutations altered the structures of the proteins due to differing amino acid interactions; therefore, altering their minimum free energy values. Moreover, data obtained was compared to results from previous studies to determine if relative free energies indicated the presence of foldons for a protein folding/unfolding pathway. The energy values obtained from the computational analyses indicate a similar unfolding pathway to the one presented from previous lab experiment. Moreover, the energetics of the mutants correlated to the folding pathway of cytochrome c.

**Stephan Freeman** (Dr. Richard Mullins)

*Approaching an eight-step formal synthesis of kalkitoxin*

Kalkitoxin, a secondary metabolite isolated from the cyanobacterium *Lyngbya majuscula*, has attracted considerable attention as a target for synthetic organic chemistry as a result of its potent (<5 nM) antitumor and neurotoxic effects. However, the molecular complexity of kalkitoxin makes its synthesis nontrivial. Herein, we describe our approach towards kalkitoxin, and improvements made upon previous synthetic routes to the natural product. Chemical transformations with accurate control over the stereochemistry of the products were prioritized in this strategy. Nearing a complete formal synthesis, the ongoing challenges in our synthesis will be discussed.