CAROLINA

CROSS TALK

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What makes a hero? That word might remind you of Marvel or DC characters with capes and superpowers. While it's unlikely that you'll see Batman driving his Batmobile down the street, **there are heroes all around us, working to advance knowledge and make the world a better place.** A hero is admirable, someone who has outstanding achievements and noble qualities . **You don't need a magic lasso or superstrength to make a positive impact on the world.** There's probably someone in your life that inspires you to push forward, even when success seems far away. Research can be daunting, but each student has a faculty member motivating them to work towards a new discovery. In this sense, researchers are heroic every day they walk into the field. Throughout the research process, they're planning, adapting, and thinking creatively. Despite setbacks, they're innovative and committed. Regardless of whether the results go as predicted, each advancement puts that field closer to a unique finding. This persistence through struggles will mold the hero, so if they haven't reached conclusive results yet, just think of it as a cliffhanger for the next chapter. Get ready for our next series of heroes because soon you'll learn about attitudes towards recycling, understanding PCOS, gender and racial norms for beauty standards, implicit racial biases, diversity in the geosciences, and gravestone studies. ***This issue of Carolina CrossTalk shows research as a story of heroism.***

Madelyn Weston

Co-Editor-in-Chief

For researchers, every day entails a **quest of discovery into the unknown land of possibilities and questions.** To actively choose to spend time in the land of such uncertainty is In the face of failure and obstacles, **researchers turn to their superpowers of curiosity and persistence and continue onwards.** Just like superheroes on media have an origin story, researchers have their own origin story—a collections of moments and experiences that encouraged them to become researchers in their field. As you flip through the next pages and learn about the exciting journeys of superheroes/researchers, ask yourself:

what is your origin story?

Henry Patel

Co-Editor-in-Chief

Letter from the Editors: Researchers are heroes

Investigating Implicit Racial Biases

Written by Caden Jackson, Student Researcher
Edited by Madelyn Weston, Co-editor-in-chief
Designed by Polly Tappan
Featuring Caden Jackson, Sociology major, Pschology/African-American studies minors, Class of 2023

I am a senior in Palmetto College/USC-Union. I am an Army veteran and a former paramedic/firefighter. I was born and raised in Union, South Carolina. I left home at 18-years-old to join the Army. Kaiserslautern, Germany was my first duty station. Coming from a small town, I was not exposed to much diversity. That changed when I left home to serve as a military police officer in the Army. Initially, I became aware of the superficial differences between myself and those I served with. As my time in service progressed, I discovered that my fellow soldiers and I had a lot in common despite the different regions and cultures that we came from. The goal of military training was to break the individual identity and create group cohesion, especially in basic training. It was very much an "us against them" situation between trainees and drill sergeants. Stripped of our individuality, we all became the same: the same uniforms, the same haircuts, and the same rules to abide by. We were all equal, despite our differences. Through the process of becoming a soldier, we were all unified. It no longer mattered what color your skin was or where you were from, we were all on the same team. I have carried this mentality with me in the years since. Regardless of our differences, we are all human and deserve respect. From this experience, I learned that diversity is not a bad thing, but an opportunity to view the world from a different perspective.

As a college student, I have had the opportunity to engage further in learning about other cultures and perspectives. I am majoring in sociology, with minors in psychology and African American studies. These three disciplines have been essential to my research. I have been conducting research for the past four years focusing on the African American community. My interest in research began through wanting to know more about the topics that were discussed in class. While taking Professor Brandon Simpson's African American Psychology class, I realized that racial injustice has been, and still is, a major problem in the United States. This topic came to the forefront of discussion as news media highlighted the George Floyd case. From this, I learned that there were many before him who had fallen victim to police brutality. I began researching why these incidents of violence kept occurring. There were no clear indications of threat from the victims against police in these cases, yet they were being murdered. The sheer number of cases of police violence against African Americans was overwhelming. I discovered that racial implicit bias could be largely to blame for this failed perception of threat. I spoke with Professor Simpson and he encouraged me to continue my research and pursue Graduation with Leadership Distinction. Professor Simpson connected me with the USC-Union dean, who is now my research mentor, Dr. Randy Lowell. Dr. Lowell and I did an independent study over a semester regarding police brutality from a psychological aspect.

CADEN JACKSON

"In this class, I was introduced to the term "implicit bias." Implicit biases are subconscious judgements that people hold about members of outgroups which influences how they act towards others."

We examined the causes of implicit bias and its implications, particularly in policing. Dr. Lowell guided me through a literature review.

In one study, I discovered that mindfulness meditation had been implemented in emergency healthcare and had reduced racial implicit bias. However, this intervention had not been explored in policing, and could translate into mitigation of racial implicit bias in a policing scenario. We created a research study based upon implementing mindfulness meditation into a threat/no-threat computer simulation involving angry/ fearful expressions on both white and African American male subjects who were armed or unarmed. We established three assessment groups: a control group who watched a 10-minute documentary with no instructions, a focused attention group who was asked to listen for a key word in the 10-minute documentary, and a mindfulness meditation group who listened to a 10-minute mindfulness meditation video and was asked to meditate 10 minutes daily between visit one and visit two (roughly a week apart). We utilized implicit association tests, which are designed to detect participants' implicit biases, to track the effectiveness of mindfulness meditation in our treatment group and create a baseline for our control group and control attention grow up.

Unfortunately, there were limitations to my study. First, I had to rely on participants' self-reporting to estimate the time spent meditating by those assigned to the meditation group. Secondly, the duration of my experiment was limited to one week between the first and second visit, which may not have been enough time for the meditation to be impactful. Mindfulness meditation did not have the effect that I had hoped. However, we found that the focused attention group outperformed both the control and meditation groups on their second visit. Dr. Lowell and I discovered that honing one's attention to a keyword (also referred to as attention priming) prior to the threat/ no-threat simulation could increase situational awareness during the scenario, thus reducing errors in performance. It also yielded positive results on the implicit association tests for the focused attention group.

My research has also influenced my focus as a student. I am utilizing findings from my literature review to address shortcomings in policing policies and procedures, particularly in South Carolina, for my Capstone paper. My experience as an undergraduate researcher has been beneficial to me as a student, but even more so as an advocate for social justice. Through my research and service as an intern, I have realized the severity of the problem of police brutality against African Americans.

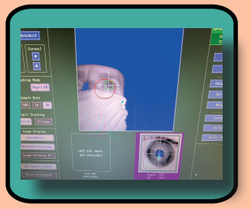
My previous research experience regarding social justice guided me to an internship last summer with the Union County Community Remembrance Project (UCCRP), a local African American historical preservation society. In my internship, I learned about racial violence that has happened in my hometown. I discovered that 18 African Americans were stolen from the Union County jail in a raid by the Ku Klux Klan and lynched. As an intern, I was given the opportunity to create a museum exhibit at a historical site, commemorating the lives of those lost. The organization had collected jars of the earth at the sites of these lynchings. In keeping their memory alive, I researched and compiled biography information on each victim to be displayed with the soil samples in the L.W. Long historic building. The goal of creating this exhibit was to honor the lives lived by these African American men who died at the hands of racial violence in Union. This opportunity fortified my passion for social advocacy and my dedication to research.

Though my hypothesis was not supported in my racial implicit bias study, the results that we did get could be significant. Exploring the possibility of attention priming as a means to improve situational awareness and reducing racial implicit bias could benefit those who serve, as well as the African American community. If successful, this could reduce the number of unarmed African Americans who are killed by police. I plan to revise and continue this research study beyond the bachelor's level. Dr. Lowell and I discovered the possibility of another intervention that may be successful. As I mentioned, we found that the focused attention group showed the most promising results. Based on this finding, I would like to follow up on that work with a new experiment that exposes participants to the interventions over a longer period of time, beyond just the span of a week. Additionally, I plan on modifying the interventions, including enhancing the focused attention condition through the use of dichotic listening methodology. Dichotic listening is "the process of receiving different auditory messages presented simultaneously to each ear. Listeners experience two streams of sound, each localized at the ear to which it is presented, and are able to focus on the message from one ear while ignoring the message from the other ear." This technique will allow for the manipulation of unattended information, such as the presentation of social justice affirming messages or unrelated messages, that may still influence implicit perceptions and responses. Finally, I will also modify the meditation condition by transitioning to loving-kindness meditation instead of mindfulness meditation to see if that is more effective, given the higher prevalence of effectiveness of loving-kindness in the literature relative to mindfulness.

Undergraduate research has provided me with many opportunities. I have presented my work at the Southeastern Psychological Association Conference in 2022, Discover USC-2022, as well as the Association of American Colleges and Universities-2022. Through these conferences, I networked with other professionals in the field who have influenced my continuing research. I obtained Graduation with Leadership Distinction at the Associate's level in Research, and I am currently pursuing Graduation with Leadership Distinction in Diversity and Social Advocacy at the Bachelor's level. I have been involved in five different research studies in my time at USC-Union involving all three areas of my academic focus.

For my research, I have been funded by the PURE grant, as well as Magellan Scholar in 2021-2022. Both of these grants enabled me to dedicate more time and resources toward my research.

The PURE grant funded my summer research study "Multiculturalism in the Curriculum: Do Core Classes Work?" with Dr. Steven Lownes and Dr. Maggie Aziz, which examined USC's Carolina Core curriculum to ascertain the levels of multicultural awareness and global citizenship that is incorporated in the university's core requirements. Magellan Scholar funded two semesters of research for my study "Meditation as a Means to Reduce Racial Implicit Bias", under the guidance of Dr. Randy Lowell. These grants provided me with the resources to continue my research beyond the classroom and led to enrichment experiences at discipline specific conferences, as well as Discover USC 2022. I had the privilege of becoming a Magellan Scholar for the year 2021-2022, and now, a Magellan Ambassador, promoting the benefits of undergraduate research to other undergraduate students. Additionally, I have had the honor of graduating with Leadership Distinction at both the Associate's and Bachelor's levels. I have also published two e-Portfolios for my work. KI3 Bias Reduction by Meditation | Caden Jackson E-Port (cadenaj.wixsite.com) Conducting research at the undergraduate level has allowed me to expand upon concepts that I learned about in class and realize their implications in the real world. By making these connections, I hope to use the knowledge that I have gained as an undergraduate student and researcher to promote social change and advocate for equal justice.



Eye Tracker display screen during calibration with Dr. Randy

Caden Jackson (researcher) and Travis Wendel (participant) during threat/no-threat lab simulation for experiment.

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You can pursue it through the Center of Integrative and Experiential Learning and their Graduation with Leadership Distinction Program.

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We are a student-run research magazine at USC that features the stories of undergraduate researchers from all the diverse disciplines. We aim to communicate student research in an engaging manner to encourage conversation and inspire others to pursue their own research interests.

Calling all...

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Interested in sharing your research or nominating a researcher for the fall 2023 issue?

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Close to Home:
Understanding PCOS

Written by Riley Watson, Associate Writer - Edited by Silvi Patel, Editor
Designed by Polly Tappan - Featuring Charlotte Burts, Nursing major, class of 2024

When it comes to choosing a research topic, inspiration can come from anywhere. Sometimes, we find the things we are passionate about through the people we love. An old friend's hobby, our grandmother's favorite pastime, or in Charlotte Burts' case: her best friend's life-long metabolic syndrome involving hormonal dysregulation.

After Burts' friend was diagnosed with Polycystic Ovary Syndrome, PCOS, Burts struggled to understand the disease. At the time, there was a relative lack of online resources pertaining to the disease. Burts has always wanted to understand what her friend was going through, so she was interested in researching its impact on women.

"When I found out there was a researcher on campus that focused on Polycystic Ovary Syndrome, I jumped at the chance to, if nothing else, understand it better for myself," Burts shared.

PCOS involves a hormone imbalance present in a rapidly growing number of women. According to the CDC, anywhere from 6% to 12% of women of reproductive age are affected by PCOS. Despite this large number, many people that suffer from this disorder feel lonely. Studies conducted by the Endocrine Society have shown that women with PCOS are 77% more likely to have anxiety than women without the disorder. It is this statistic and others like it that Burts and her mentor want to address. While many researchers are working to understand the causes and symptoms of PCOS, Burts' and her mentor Dr. Pamela Wright's focus is to better understand women's experiences surrounding PCOS. Burts spends her days conducting and transcribing interviews from women with PCOS, then analyzing the contents for emerging themes and ideas. "With my research, it's an advancement and a look into how women perceive a condition like [PCOS]," Burts explained. "Rather than always starting with a negative or positive light, we're letting them guide the research."

A historical lack of attention to women's health issues has contributed to stigma and misunderstanding surrounding disorders that primarily affect women such as PCOS. According to a study published by the National Library of Medicine, receiving a PCOS diagnosis took at least 2 years for 33.6% of women diagnosed with PCOS. An even larger number of women (47.1%) reported that they had to meet with three or more health professionals before receiving their diagnosis.

The work that Burts and Dr. Wright are conducting is extremely important to understanding not only PCOS as a disorder, but also the people behind the diagnosis. So often, these women get caught up in statistics and assumptions. The weight of other people's ideas about PCOS can be overwhelming. Burts wants to give these women a voice, and find out "what's most important to them." The best way is to talk to them, of course. That's why, inspired by her work with Dr. Wright, Burts has taken up a passion project.

"When I started this, I just wanted to understand what women were going through," Burts said. "Now I realize there could be so many things done, like the creation of a digital platform or analyzing survey data in tandem with interviews to get a more holistic perspective on the attitudes, perspectives—all that—of these women."

With the growing number of PCOS sufferers, and the immense lack of information on the intricacies of the disorder and all of its physical and mental effects, it's easy to see the value of Burts' and Dr. Wright's work. She also plans to expand upon her research with Dr. Wright and continue researching in her personal life. Burts recently received the Magellan Scholar Grant and a Mini-Magellan Grant to interview women with Polycystic Ovary Syndrome to get better insight into their perspective. Thanks to her courageous and essential research, less women will feel alone in their diagnosis.

Burts would like to thank her mentor Dr. Wright for all of her guidance and support during this process, as well as Dr. Cindy Corbett and all the ACORN center faculty for their help and expertise in research.

Burts giving an oral presentation at the College of Nursing Research and Scholarship day

Charlotte Burts presenting on a scoping review centered around PCOS and Digital technology

"Women's health, to me, seems like it is behind a lot of other specialties in health care," Burts said.

"I think there is a lot still to be learned about reproductive diseases and chronic conditions related to women's health."

CHARLOTTE BURTS

From SpongeBob Squarepants to Caribbean Crustaceans

Written by Heather Bruck, Student Researcher
Edited by Audrey Galimba, Associate Writer - Designed by Mary Stafford
Featuring Heather Bruck, Biology, Class of 2023

If you ask my family whether they are surprised by my career path, they would say not at all. They seemed to know what my future held before I did. When I was very young, maybe five or six years old, my mom found me sitting on the coffee table intensely watching Spongebob with a snorkel and mask on. That moment was a hint towards my future career in marine ecology, and I think Spongebob is the true spark of my love of marine organisms. Who wouldn't want to be a marine scientist after watching a show where a sponge lives in a pineapple and a crab runs a restaurant?

I was fortunate to get my PADI Scuba certification alongside my family when I turned 12, though at the time I didn't realize how helpful that experience would be. I just thought I was cool for being a scuba diver from Ohio, nothing more. On family vacations, we would dive along reefs and wrecks. I loved seeing the fish and everything moving together, but I was more interested in watching the pretty marine life than understanding how they interact. It wasn't until a research trip to Honduras in the summer before my junior year of high school that I realized how fascinating research can be. It was a two-week volunteer program through Operation Wallacea, where a group of students from our school spent a week in the cloud rainforests in Tegucigalpa and another diving the reefs off of Roatan. The entire trip focused on contributing to scientific fieldwork, where graduate students and professors collected data on a variety of life in the area. We helped with bird abundance counts by listening to their songs, tree health surveys by measuring the size and condition of hundreds of trees, and even made traps for dung beetle collection. The latter was by far my least favorite activity; it involved rolling balls of horse poop into cloth balls as the bait for dung beetles. The research community I found within Operation Wallacea was entrancing. I wanted to be a part of the never-ending questions and the pursuit of knowledge about the natural world. While diving off Roatan, we came across a wall of reef at least 30 feet tall. At that moment, I had the cliche 'aha' moment where angels sing and the world gets a bit brighter. There was so much life in one place. Everywhere I looked, organisms were moving and breathing and living. I fell in love with marine life then and there and decided I would do everything I could to study these creatures. When we returned from the tropical beauty of Honduras to the corn-filled state of Ohio, I brought with me a newfound passion for research.

When I arrived at USC, I began looking for research experience to get my foot in the door. I chose the cold-email approach, where you send emails to professors who do research on a topic you are interested in and hope for a response. I thought microscope work in high school was fun, and I had killed every plant I ever had, so I searched for any opportunity with microscopy and without live plants. Fortunately, Dr. Jeffry Dudycha in the Biological Sciences department was open for undergraduate volunteers to join the lab. I began with an independent project studying the physical traits of water fleas, a common freshwater crustacean, to determine if there were differences in body characteristics within a population from the same Wisconsin lake. For hours I measured the body length, tail length, and eye size of water fleas. Two months later, I learned that all of the samples were stored for too long and had broken down too much for the data I had collected to be useful. This was devastating; it was my first-ever research project and it felt like a failure. However, it was an important lesson in research. Not everything will lead to the results you are looking for (and the way you collect and store your samples REALLY matters). Research is enticing when you hear about the major discoveries and exciting new knowledge, but 90% of the time research ends in insignificant results or different outcomes than expected, and that is OK. That is how research is meant to be. It is an exploration of ideas, theories, and methods. If it always ends in significant answers, then you are not asking hard enough questions. From that experience, I was able to work with Trenton Agrelius and Matt Bruner (graduate students in Dr. Dudycha's lab) on their projects on mutation accumulation and epigenetics of water fleas. It was a great experience but it taught me that I am not a geneticist nor desire to ever be one. While I do not mind detailed procedures, genetics involves hours of work that may ultimately have to be redone due to a single contamination or missed step, and I do not have the patience for such a career. I enjoyed the ecological concepts I learned in classes, so I switched to ecology-focused research to see if that field was a better fit for my interests. I helped Jake Swanson (another graduate student in Dr. Dudycha's lab) with his ecological project studying phytoplankton communities in local South Carolina lakes. The ability to learn how phytoplankton interact with one another and their environment was immediately a hit for me, and I dove into the deep end of ecology.

Me collecting Caribbean spiny lobster under special activity permits during my Hollings internship. Picture taken by Natalie Stephens

I developed an independent project alongside Swanson's work as an independent study credit (BIOL 399) in the fall of 2021, which I later presented at the Ecological Society of America Conference in Montreal, Canada. The same semester, I wanted to explore alternative ecology-focused projects outside of phytoplankton. I worked in Dr. Nick Peng's microbial ecology lab studying the greenhouse gas output of marine fungi, which introduced me to the variety of projects and study systems within ecology that are worth pursuing. Both of these experiences strengthened my interest in marine ecology, which I pursued further with research during my National Student Exchange and my Hollings internship.

"Research is enticing when you hear about the major discoveries and exciting new knowledge, but 90% of the time research ends in insignificant results or different outcomes than expected, and that is OK."

In the spring of 2022, I studied away at the University of the Virgin Islands through the National Student Exchange. While I got to spend a semester on the beach, I was also looking to get field experience. Fieldwork is research in the environment you are studying rather than in a lab. For the semester, I took a scientific diving class (AAUS Diving) to allow me to legally do research while diving under the water. Going from just looking at pretty fish and being safe with my own dives to learning how to gather data and be aware of others' safety was a big jump. It helped me feel comfortable gathering data under the water with limited time and stressful environments. With this, I helped graduate student Matt Souza with his ecology-focused project studying the impacts of an invasive seagrass, Halophila stipulacea, on the diversity of invertebrates and the distribution of native seagrass. That project solidified my interest in marine invertebrate ecology. I was fascinated by all of the different invertebrates we located among the seagrass and how the invasive seagrass was impacting the entire community. With that focused research interest and my scuba certifications, I entered my Hollings internship excited to delve further into my future career.

Carcinonemertes conanobrieni, the nemertean worm I studied during my Hollings internship. They eat the developing eggs of Caribbean spiny lobster, Panulirus argus, but there is a lot still unknown about their ecology and biology. Picture taken Heather Bruck.

I was lucky to be named a NOAA Ernest F. Hollings scholar in 2021. The NOAA Hollings Scholarship is a national scholarship awarded to applicants who demonstrate the potential to make significant contributions to their field within oceanic and atmospheric science. It is such an incredible program and experience; I encourage all sophomores interested in ocean and atmospheric sciences to apply. If you are interested in this, the National Fellowship Office at USC has employees dedicated to helping you with the application process. I also have a page about the application and tips for the essay on my personal website, heatherbruck.com. For the summer of 2022, I was in the Florida Keys studying the relationship between the Caribbean spiny lobster, Panulirus argus, and a nemertean worm that eats the lobster's eggs, Carcinonemertes conanobrieni. While my mentors were Dr. Donald Behringer (University of Florida) and Dr. Mark Ladd (NOAA Fisheries), I worked a lot with Dr. Antonio Baeza's lab at Clemson University. We spent the mornings scuba diving for spiny lobsters with eggs, catching them, and bringing them back to the lab. After a quick shower and lunch, we would be in the lab counting the number of nemertean worms found within a specific number of lobster eggs and recording a multitude of biological and observational data. These were some of the longest research days I have ever had, typically going from 7 am to 8 pm. However, I wouldn't change a thing about it. Well, on second thought, perhaps I would change one thing: During a dive, I was poking around a dark crevice hoping to entice a lobster out. While I was intent on the lobster inside, I completely missed the juvenile nurse shark that was sharing the crevice with the lobster I was after. I kept poking the shark (by accident)! When the shark had enough, it poked its head out to warn me to go away. I never thought a shark could be judgemental, but I could see the annoyance in its eyes. It gave me such a jump scare I nearly leaped out of my wetsuit. While this wasn't a shark with big scary teeth, it was a shark nonetheless, and I like studying invertebrates because they typically don't bite. If I could, I would definitely warn my past self to be more careful sticking my hand in dark holes in a reef.

Caribbean spiny lobster in the Florida Keys, the organisms I was studying for my Hollings internship. Picture taken by Heather Bruck.

I learned so much about how to design, conduct, and analyze the results of an independent project in those few months, alongside the fun of diving nearly every day. I was also able to use creative outlets to share scientific work with a wider community. As part of a Hollings internship highlight, I created a digital watercolor of my study organism, the Caribbean spiny lobster. Contributing to public education about marine life opened my eyes to how valuable creative outreach truly can be. Fancy scientific papers with big words can only get us so far in research. If we want to make an impact on society and the conservation of the natural world, we need to communicate research with the public in an engaging and informative manner. With my digital painting, I learned that art may be one solution. I plan to continue using creative outlets to connect a larger community with my research and important conservation work. My main goal was to see if the habitat the lobsters were found in had any correlation with the number of worms we found among the eggs of an individual. Because of the large amount of data we had collected, I extended this project as my USC Honors thesis. Under the guidance of Dr. Dudycha and Swanson, I learned how to code in R—a program that any marine scientist will tell you they love but hate—and how to choose what statistical tests to use in which scenarios. The entire process has prepared me for the start of the next step in my career: graduate school.

Digital watercolor of the Caribbean spiny lobster created for my Hollings internship, which opened my eyes to the value of creative outreach.

In the fall of 2023, I will begin my doctoral program in Marine Science at the University of North Carolina Chapel Hill focusing on marine invertebrates. It is difficult to trace which event in my life began this journey—watching Spongebob in my childhood (and adulthood), my first research trip, my first experience in a lab. Each experience influenced the other, naturally leading to the next step in my journey as if it was all laid out. There were a lot of difficulties and stress along the way, but I wouldn't change anything I have done in pursuit of a career in marine invertebrate ecology.

If I were to give freshman-year Heather any advice, it would be this: celebrate the "failures." It is more common than not for the outcome of scientific work to be insignificant relationships or "failed" experiments; it is simply the nature of research. It is more common than not to receive a rejection from an internship, scholarship, or project; it is simply the nature of a career in science. This past year, I have made an effort to celebrate rejections and "failures" alongside successes. For every scholarship, award, and graduate school I have applied for and received a rejection notice, I do a small thing for myself to recognize the effort I put in towards that goal and to remind myself this is not a failure. Whether I treat myself to ice cream or go for a walk around the Horseshoe, I actively engage in an activity that I dedicate to the specific rejection. It has helped me recognize that things I initially see as complete failures are only a change in my plans and that rejections are much more common than I initially thought. So take the time to celebrate your "failures"—you may find that future rejections and unsuccessful experiments are less devastating than they used to be, and the successes are even more gratifying.

Beauty Standards that arise from Media & Culture

Written by Nicole Hamner, Associate Writer - Edited by Marina Ostanin, Associate Editor
Designed by Polly Tappan - Featuring Kate Kuisel, History and Philosophy majors, Media and Film studies minors, Class of 2023

Growing up in the 21st century, women are faced with beauty standards at every facet of media, which contributes to the rise of depression and anxiety. Where do these beauty ideals come from? Is it from the media, is it cultural, or both? To answer this, Kate Kuisel conducted historical research. Maybe when you hear research you think of experiments and data and graphs. Essentially, collecting quantitative data in order to test your hypothesis. In Kuisel's words, historical research "tends to rely on personal qualitative observations," but what might this mean? Well, personal experiences and background play a part in interpretation of findings.

Though Kuisel wanted to study the gender and racial norms of beauty standards, she did not always fully understand historical research herself. It kind of stumbled into her path. In her sophomore year, she worked under Professor Allison Marsh helping to interview scientists from ex-Soviet countries who immigrated into American academia. Their consensus was that gender discrimination was present in American academia and other countries. This experience became the foundation and commencement of Kuisel's interest in historical research as a means to explore the origin of beauty standards.

Just a year later, Kuisel asked to work under Dr. Lauren Sklaroff who was currently studying 1970s popular culture and wanted to have background research on what information is available in these popular culture magazines. Some of these included Vogue, Rolling Stone, and most notably, Ebony. The process of combing through magazine advertisements and background literature to find what related to Kuisel's thesis had a few levels of analysis. She worked tirelessly in the microfilm collection of the Thomas Cooper Library to find specific ads that foreground social, racial and then gender norms in order to narrow down her data set from over 300 ads to just 32. This analysis supported that there were many advertisements that proved to be harmful to both the physical and emotional health of the women attempting to fit into beauty standards being promoted during the 1970s. These standards included married couples, lighter skin women, and Eurocentric beauty. Diving deeper into evaluating these standards, Kuisel looked at advertisements directed at African American women.

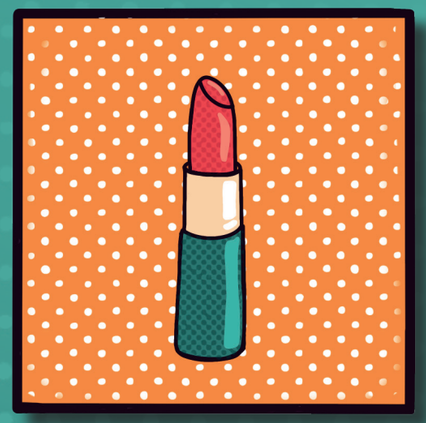
An example of one of the advertisements was a skin bleaching cream, which came from a white owned company during the Civil Rights cultural movement. This cream, as well as other products during this time, contained arsenic, which is extremely harmful to your skin.

It was well known that having lighter-toned skin helped African Americans in society, and this cream was being widely used without any knowledge of its harmful effects to these women.

Shockingly enough, it was even FDA approved. Another product that was heavily marketed to African American women during this time was hair relaxers, which essentially make it easier to straighten tightly curled hair. Chemicals in this product would alter hormones and could contribute to uterine cancer. In addition to this, African American women were targeted with captions such as

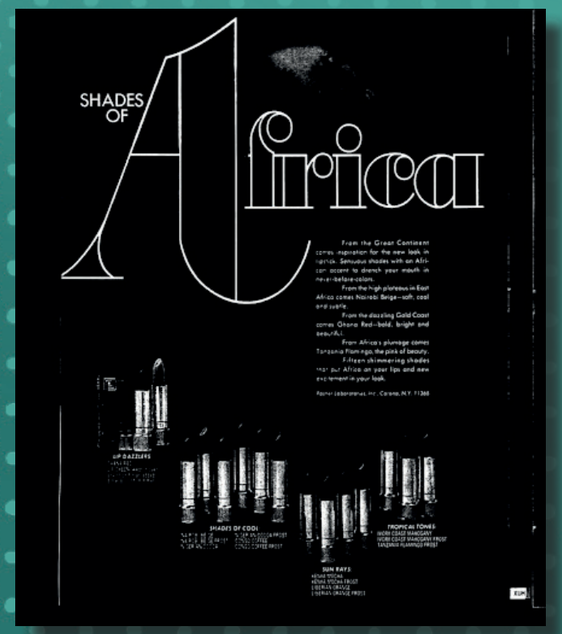
"Black Is beautiful"

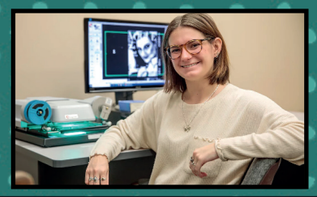
as seen above.



Finally some progress was seen in Shades of Africa, which sold makeup bottles named after countries in Africa. In order to appeal to the Pan-African movement, dedicated to establishing independence for African nations and cultivating unity among black people throughout the world, the marketing was written in Swahili. Eunice Johnson, wife of John Johnson and founder of Ebony, noticed that her models for Fashion Fair, which was a traveling African-American fashion exhibition, were mixing foundations to match their skin color due to the lack of darker shades in the current makeup industry. Johnson decided to create her own makeup line dedicated to women of color. Although this was a big step for the time, beauty lines today still only have 3-5 shades for women of color, whereas there are 8-10 available shades for lighter skin tones.

Although the past holds many mistakes, historical research allows us to learn from these mistakes in order to treat people better in the future. Nowadays, marketers have to be very careful to not offend any group of people. Yet still, Arabs and other minority groups face passive discrimination much like African American women in the 1970s due to both media and cultural influences. It is important to spend time observing these influences and how they form and impact beauty standards for women. Ultimately, it becomes everyone's personal responsibility to stop allowing harmful beauty standards to arise in media that discriminate, tear people down, or harm our bodies physically and mentally. While an advertisement may not seem directly offensive to you, consider the history and background of the people it is truly targeting. Kuisel's research shone a great light onto the cultural and media impact on beauty standards, specifically African American women during the 1970s, and she is now seeking to expand this research into the Ph.D. program at UC Berkeley next fall.





KATE KUISEL in research lab.

In Which the Hero...

Becomes a Researcher of the Macabre

Written by Lilith Hutton, Student Researcher & Magellan Ambassador
Edited by Madelyn Weston, Co-editor-in-chief
Designed by Polly Tappan - Featuring Lilith Hutton, Anthropology major, Criminal Justice minor, Class of 2023

The idea of research (understandably) confuses and scares most people. Where to start, where to look, how to analyze and conclude the data found, all questions that can seem paralyzing. Previous to my research, these scared me too.

I have always been sure that I would pursue anthropology, even before I knew what it was. I grew up loving Egyptology, wishing that I could be the one excavating those tombs and pyramids. I did not know at the time that this was considered archeology, one of the four subfields of anthropology. As I grew older, I realized my real passion was in a different subfield of anthropology altogether: biological anthropology. I am currently pursuing the experience and training needed to become a forensic anthropologist, which is a professional called in by law enforcement to identify the age, sex, height, weight, ethnicity and any other pertinent distinguishing factors of a skeleton. I do still feel a special connection to archeology, though I have now expanded my knowledge and appreciation for all four subfields of anthropology: linguistic anthropology, cultural anthropology, biological anthropology, and archeology. I never realized how pursuing research would open doors for me.

It all began when my advisor at the time, Dr. Sharon DeWitte recommended ANTH 201 Anthropological Inquiry in Undergraduate Research. The title alone was terrifying. After some back and forth, I decided to take the class, one of my best university decisions to date. The professor of this course, Dr. Eric E. Jones, broke the concepts of research and theory into bite-sized chunks in an open and supportive environment. On our first day of class, Dr. Jones explained that we would be using in-class material such as graveyard and cemetery studies, to do research. I was immediately interested and began thinking about how much I would like to pursue that as my topic, as I had always had a healthy appreciation for the macabre. I spoke to him after class about my research idea and the fact I wanted to do gravestone studies. He replied with an emphatic "Yes!" Along with his positive reassurances in the following weeks, (and it being a requirement for the class) I began my research.

Though quite unconventional, I deeply enjoyed my research, entitled; "Iconography, Inscription and the Gendered South: An examination of gender differences in public and private cemeteries in 1800-1900s Columbia". I examined 52 grave monuments in both the Elmwood Cemetery (public) and the Bethel United Methodist Church Cemetery (private). I concentrated on those who had carved imagery, called iconography, on the stones, and kept an even split of male to female persons. I led a small team of two to three people, not including myself, in gathering as much data as possible from the individual's monuments. Through this, I found that due to the circumstances of the time, women always had their relationships to family - specifically a man - written, or inscribed, on their gravestones, whereas men did not. I also discovered that by far, plant imagery, particularly daffodils, appeared on graves the most, regardless of resting place. This is interesting because typically in southern grave studies, rosebuds, and weeping willows are the most common plants. The thing that surprised me most about my research was finding that iconography of books and literature on female graves was more prevalent than on men's graves in the Bethel United Methodist Church Cemetery. I surmised that this was due to the wealth of the methodists in this time period, as they were plantation owners, and could afford to hire in-home tutors for their daughters. This was a common practice among the wealthy of the time as they wished for their daughters to be able to entertain guests and their husbands upon marriage.

A.

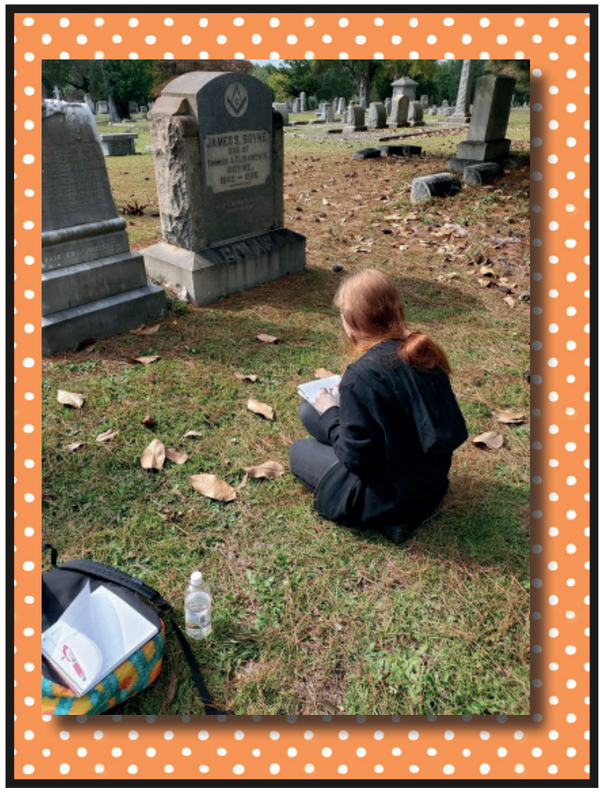
Grave of Alice Dent, 68 yrs, "relict of Sam L Dent" is the biggest part of the inscription - the same size as her name. This is a firm example of the place of women at that time. THe monument also features a book, showing class/status, as she would have been able to read.

B.

Grave of Annie Thomas, 7 mos., features daffodils and vines. Epitaph reads "Safe in the arms of Jesus". Daffodils were a common theme in the graves seen in Columbia. Elmwood Cemetery

Although grave studies are already a niche topic, southern grave studies are even less researched, especially in Columbia. Generally, grave studies focus on New England because they are closer in design to their European counterparts, and stone was more readily available. Thus, there were more well-known carvers, and more people had headstones in the Northeast than the Southeast. When studies have been done in the Southeast, they are typically focused around port cities such as Charleston and Savannah, as they were hubs of trading both ideas and materials - which included gravestones. The location of my research is not the only thing that makes it distinct. Most research in this field focuses on the inscription rather than the iconography. Even when looking at the inscriptions of graves, most research rarely addresses differences according to gender, and how that may shape the language used. The distinction here is that my research has a dual focus on both inscription and iconography, carefully looking at both, and how the social climate of the time influenced what people had carved on gravestones as well as the shape of the stones themselves. I also included the way that the social climate influenced the inscriptions on the stones, and how that varied according to the sex of the individual.

All in all, my research was nowhere near as scary as I expected. The most difficult part was finding 15 sources for my literary analysis. Once I began thinking about my question, I refined what variables I would look at - making sure to check for confounding variables. I included a total of 10 variables that would allow me to accurately analyze my findings such as iconography, proximity to relatives, shape, grave goods, gender, epitaph, statistical data modifiers, and year of stone. An epitaph is any poem, bible verse, quote or memorial text that doesn't reference statistical data aside from general pronouns. Statistical data includes the person's name, birth date and death date. Modifiers explain that data, like describing where the person was born or died, what their job may have been, and if they were a parent. The gathering of the data itself took a full day for each grave site, because we recorded all of this information, took pictures of the stones, and drew each of them to capture every detail. I did not expect it to take any more than three hours with a team, I was very wrong.



Grave of James Boyne, 34 yrs, features the freemason symbol as prominent iconography. Also pictured is Lilith Hutton, copying down the inscription and marker itself. Elmwood Cemetery.

Despite that, the fieldwork portion of the project was my favorite. If I had unlimited resources, I would record these variables and capture the images of the stones for the entirety of Elmwood Cemetery. Even more of a surprise was how long it took to enter the information into a database and to analyze it, a somewhat monumental task. Going into my research, this was the aspect I was most nervous about, as I didn't think that I had the level of skill and knowledge needed to accurately analyze my data. Once I had (painstakingly) entered all the data, patterns in the data practically jumped out of the program they were so clear to me. Making sense of the patterns was incredible, and I was thankful I collected as much data as I did. When it came time to apply the theory and make conclusions, I realized that my positionality, (how my positions in the world and society shape my thoughts, feelings, and actions) led to deep feelings about my findings in the data. Though I identify as non-binary, I was raised as a female and thus had feminine experiences as a baseline for most of my life. I was both horrified at the blatant and normalized view of women as property that I saw, and somewhat proud that in the Bethel Methodist grave site women were shown as educated and intellectual for all eternity.

The research I conducted has led to incredible developments in my university career. One of the things I am most thankful for is mentorship from Dr. Jones. He helped me come out of my shell and feel comfortable as a student researcher. He also pushed me to pursue the DURT track (Distinguished Undergraduate Research Track), a form of honors for anthropology majors. The completion of this research also gave me the confidence to pursue two more topics of research that are currently ongoing. I am using my positionality as a nonbinary queer person to research the effects of mask wearing (in relation to COVID-19) on the transgender and nonbinary community and how it affects their day to day life. I am also researching gatekeeping in the goth community on TikTok and how it shapes users' language and interaction with others. The fact that my research is distinct from those published in the field has also given me the confidence to reach out to publications such as Carolina CrossTalk to publish. Finally, through the love of research this experience showed me, I decided to apply to become a Magellan Ambassador for the Office of Undergraduate Research, hoping to instill that love in other students. This experience gave me the push I needed to blossom and truly live up to my potential as a student.

All For One and One For All: Diversity In The Geosciences

Written by Peyton Smalls, Student Researcher

Edited by Heny Patel, Associate Writer - Designed by Mary Stafford

Featuring Peyton Smalls, Environmental Science, Class of 2023

During the rise of movements for justice, diversity, and equality, especially during the COVID-19 pandemic, I asked myself, "What can I do?" After so many trivializing emotions of feeling small and powerless, it seemed as though the most perfect research opportunity fell right in my lap. Before that moment occurred, I had no idea that research was even a thing because my first semester at UofSC was spent online at home due to the COVID-19 pandemic and then the adjustment to our new normal was slow. Unexpectedly, I was contacted by a professor one day—Dr. Jessica Barnes. Dr. Barnes remarked on how I was excelling in my GEOL 101: Introduction to the Earth class and how research in the geosciences would be a great opportunity for me. She contacted me with some information about my primary mentor, Dr. Katherine Ryker, and her lab that was working on a research project to curate a database of non-stereotypical scientists, specifically people of color, foreign nationalities, persons who are disabled, persons of all ages, and those who do not have English as their first language. This research project resonated with my values and beliefs regarding diversity because I consider one of my purposes is to increase diversity in the spaces I am in and I had no idea that research was a way to do it. Being a native South Carolinian born and raised on the beautiful James Island in Charleston, I went to a performing arts high school and majored in orchestral performance. My experiences before college were different compared to what I am doing now with diversity and geoscience research. I knew I had a passion for equity and justice, but had no clue that undergraduate research was where I would be able to flourish in my passions. Research created a space for me and my passions, and I hope I can do that for other individuals in the geosciences.

Being a senior environmental science major, I have taken courses from environmental economics to environmental engineering in order to understand what the word "environment" entails in different contexts. These classes allowed me to discover my interest in environmental justice and forms of inequity in the geosciences. Though, I have to recognize that my research was definitely outside my comfort zone at first. When people would ask about my project and question things that I am speaking on, it made me feel as though I had to defend not only those I am advocating for but also my identity because my research was by and for minorities. Since there are several arguments today around DEI (shorthand for diversity, equity, and inclusion) and when I first started, this was another reason why I was often nervous when receiving questions. As time has progressed, I have been able to become confident in myself and answer those tough questions in a way that my experiences and beliefs empower me to.

I have been in the Ryker Lab since the fall of 2021 and it has been truly life-changing. My research project focuses on diversifying geosciences through the presentation of non-stereotypical scientists to introductory-level geology students. I had the opportunity to read background literature on geoscience spotlights created by Dr. Jeffrey Schinske, who originally adapted "Scientists Spotlights." These spotlights showcased profiles that highlighted diverse scientists in several scientific disciplines. We read through those spotlight profiles to deepen and help strengthen the background process I went through for my research. Dr. Schinske had a codebook, a book of certain keywords, that I utilized in aiding the thematic coding of responses to the question I gave students at the beginning and at the end of the semester: "Who are the types of people who do science?" Thematic coding is looking for keywords and marking their presence for each response I receive.

My other tasks included thematically coding 400+ responses beginning in the spring to summer of 2022. With the results from the coding, I used the data to write abstracts for the various conferences and create presentations for said conferences. I have gotten to present at six conferences and symposiums, such as Earth Educators' Rendezvous and Geological Society of America Connects, which are events I will forever be grateful for attending because I met some incredible educators in the geosciences! The platform instructors hold is incredibly valuable because instructors can influence students' ideas as to what they want to do with their careers. Introductory courses specifically can make or break a student's idea of continuing in that certain area or even taking a basic interest in it. I have explored how mentioning diverse scientists in class can increase non-stereotypical language, such as "anyone can do science", which is reinforced by positive feedback at conferences from instructors who aim to be more inclusive. Now I will be looking at how well students relate to scientists before seeing versus after seeing scientists from the database.

My name badge for EER!

My research pushes the limits of the geosciences because it encouraged conversation around diversity, equity, and inclusion. DEI can be a touchy and uncomfortable subject for some people, even though it should not be, so I am fortunate to work on a research project that sheds light on topics that must be discussed and implemented. I am very passionate about diversifying the geosciences because at one point, even though I saw my potential of being a scientist, many people who look like me are discouraged from embarking down this path. After all, they do not believe there is a place for them in this field. I am confident that I can make it, and I believe that if one person can make it, we should try everything we can to ensure others in a community can make it, too. There is space for everyone. My parents always instilled in me that uplifting those around me is worth more than rising alone to hog all of the praise.

I am fortunate to receive the Magellan Scholar and the Magellan Guarantee grants. The Magellan Scholar grant is not a community-specific grant, meaning anyone can apply while the Magellan Guarantee grant is a community-specific award for Ronald E. McNair Scholars. The McNair Scholars program was another research experience that I will forever be grateful for. This research experience prepares those who are underrepresented in research for graduate school. During the program, my research focused on how educational gaps occurred in K-12 youth due to institutionalized racism. This research project became more literature-review-based over six weeks. I also had the opportunity of gaining writing experience, as I wrote a 17-page research paper. Through that process, several mentors guided me with my primary mentor being Dr. Jamil Khan. I also had the opportunity to gain meaningful memories with amazing and brilliant researchers in my cohort. The highlight of the program was being awarded Outstanding Researcher! This award was awarded to someone in the cohort who was considered the most outstanding in their research by the mentors. Having experiences under my belt allowed me to be a spokesperson for research, and that led me to the Magellan Ambassador program! Being able to spread the benefits of research to hundreds of students, gaining connections with the people in my cohort and Office of Undergraduate Research, and gaining leadership experience are some things I am always so grateful for!

I believe my research can change my field because since the diversity level is low in the geosciences, this is research that directly considers diverse geoscientists. This is a project dealing with diverse geoscientists directly in a geoscience-based class making the results more impactful.

Me presenting at the Baylor Ronald E. McNair Conference in Waco, Texas

I have had the chance to voice my results in a multitude of settings. I do have a favorite moment, though, and that was when I received personal praise on my oration skills and findings after giving one of my first oral presentations at a conference. This was the Ronald E. McNair National Conference at Baylor University. The brother of the late Ronald McNair - Carl S. McNair - told me how after all of the presentations he has seen in his years of being the head of the foundation, how influential mine was and how proud he was of me for tackling the topic. The presentation I gave was on the research during my McNair summer component on how there are educational gaps in K-12 youth due to institutionalized racism. This moment of him telling me how proud he was of me spoke levels because the topic is controversial yet one that I am so passionate about. I have received praise from instructors on my other research project on diversifying the geosciences and it constantly reminds me of one word: gratitude. I am so grateful for those who propel me forward in this journey.

Me at Baylor Ronald E. McNair Conference Closing Gala

Expanding the database and project to younger grades would allow younger eyes to be able to see the representation and apply to colleges and universities with newfound aspirations. I have learned through research that I have the privilege of using my voice for those who do not have the same resources as I do.

Researching as an undergraduate student has completely changed my trajectory for post-undergrad. I will now be going on to apply to universities in hopes of attaining my Ph.D., then go on to work at the Environmental Protection Agency in the Environmental Justice sector. I plan on broadening my horizons and further exploring the intersection of DEI and environmental science.

Research answered the question "What can I do?" Through the love and support of my mentors, my loved ones, and my faith in God I have been able to become the best version of myself. Research empowered me to create change.

"Research empowered me to create change."

OUR Director Spotlight:

Dr. Lauren Clark, Director of the OUR

Written by Heny Patel, Edited by Dr. Lauren Clark, Designed by Polly Tappan

Heny Patel:

Hi Dr. Clark. Thank you for sitting down with me to offer some of your insights regarding research at the USC. To start us off, can you tell us a little bit about yourself?

Dr. Lauren Clark:

I'm the new director of the Office of Undergraduate Research here at USC, and I am very excited to serve in this role where I work with a fantastic team in the OUR – everyone is committed to helping students find research opportunities.

I grew up in Woodruff, South Carolina, back when it was a three-stoplight town. After growing up in a small community where everyone knew each other, I wanted to attend a university where I could "just be a number" on a large campus, so I landed at USC. I absolutely loved my time as a student at USC, where I was a marine science major and SC Honors College student. USC became my window to the world and provided many opportunities to explore different interests, including undergraduate research and study abroad. Because of my positive research experiences as an undergraduate, I decided to apply to graduate school. I went to the University of Texas at Austin for my Ph.D. in marine science, and then I worked as a postdoc at Yale University in the Department of Geology and Geophysics. After that, I was an assistant professor at the College of Charleston for several years before resigning to stay home with my children. Following the preschool years, I came back to USC to work in the Office of the Vice President for Research as a Research Program Manager, where I worked for 10 years before moving into my current position in the Office of Undergraduate Research.

You seem to have had incredible research experiences during your undergraduate years as well as after you graduated! How did you first get involved with research? How did those research experiences impact you?

I had fantastic research experiences and mentors as an undergraduate student. My first exposure to research was through the Pritchard's Island Loggerhead Sea Turtle Conservation Program, where I was a staff member for several summers during college. The program operated through USC Beaufort and involved relocating loggerhead sea turtle nests to hatcheries to protect them from raccoon predation and flooding, as well as collecting data on each nest and female loggerhead. Groups of volunteers came to assist throughout the summer, so informal education was an important part of our job as well. Pritchard's Island was only accessible by boat, and we lived in a shack on stilts with no air conditioning, affectionately called the "Loggerhead Hilton." One summer I conducted an independent study research project with a USC faculty member which involved comparing methods of determining hatching success for individual sea turtle nests. Although I started out as an art major at USC, my experiences at Pritchard's Island drove my decision to switch my major to marine science. My senior thesis project involved a study of nitrogen cycling in salt marshes, which led me into the field of marine biogeochemistry for graduate school. I was fortunate to have wonderful and supportive mentors along the way, which laid the foundation for outstanding undergraduate research experiences.

I went to the University of Texas at Austin for my Ph.D. in marine science, where I worked with an outstanding dissertation advisor. My research focused on the cycling of the nutrient element phosphorus in the ocean, and I had the opportunity to go on a number of oceanographic research cruises to collect samples. Once I completed my Ph.D., I became a postdoc at Yale University – my favorite part of that experience was the opportunity to serve as a research mentor to undergraduate students in the lab. After my postdoc, I became an assistant professor at the College of Charleston, where I taught undergraduate and graduate level courses and labs. I also served as a research mentor for a number of undergraduate students, which was one of the most enjoyable parts of my job. I resigned from that position, which I loved, to stay home with my children for a few years. When I went back to work, I was fortunate to be offered a position in the Office of the Vice President for Research at the University of South Carolina. Working in the VPR office as the Research Program Manager provided me with new opportunities to serve student researchers from an administrative angle. My student-focused responsibilities included managing the SPARC Graduate Research Program and programming for summer undergraduate research students, as well as the overall organization of Discover USC.

It's incredible how all those experiences led you to be where you are right now. How do you think your mentoring experiences impact your approach to guiding students right now as the Director of the OUR?

In my new role, it is helpful to have the experience and perspective of being both an undergraduate researcher and an undergraduate research mentor. When I was an undergraduate student, my mentors encouraged me, provided technical guidance for the project and shared professional advice for my next steps. When I was an undergraduate research mentor, I asked my students lots of questions so that I understood their goals and motivation for engaging in research. I made myself available so that my students would feel comfortable asking me questions, and I helped students plan their next professional steps.

In the OUR, programs are structured to guide students through the research process: we help connect students with mentors, we provide funding through our Magellan programs, and we provide opportunities for students to showcase their work. Every member of the OUR team serves as a mentor by helping students navigate the research progress, which includes help with getting started in research and connecting with a mentor, guidance on finding funding opportunities and encouraging students to present their work in one of our showcase opportunities. As the director, I am always looking for ways to engage more students in research and improve our programs.

Students are incredibly lucky that they have the OUR's support when it comes to all parts of their research journey. What are some of your favorite aspects of your position as the director of the OUR?

I have a lot of favorites! USC's students are extremely bright anmotivated, and I enjoy learning about their fascinating research projects in diverse disciplines. I enjoy seeing students gain confidence through their research experiences and progress to new opportunities. I love the energy at Discover USC when students are sharing their research with others in the USC community. We have an impressive volunteer corps of Magellan Ambassadors, who are undergraduate research students serving in a critical outreach role for the OUR.

As the OUR Director, I have the privilege of working with faculty and staff across the university who help promote undergraduate research. Our outstanding faculty serve as undergraduate research mentors and support undergraduate research students in numerous ways.

We have an amazing team in the Office of Undergraduate Research who are dedicated to serving our students. We have wonderful campus partners who help us share research opportunities. I greatly appreciate the support the OUR receives from the Office of the Vice President for Research, which allows us to offer grants to student researchers. Undergraduate research is truly a collaborative effort at USC!

For students that are looking to get started in research, what might they expect from faculty-mentored research experiences if they've never been involved with research? What is your advice for an undergraduate student looking to get started in research?

While every research experience is unique, some common aspects of undergraduate research include the opportunity to develop new skills in a real-world project, to learn from a faculty mentor, to sharpen problem-solving and analytical skills, to try something new (and possibly fail and try again!), and to help determine future paths of interest.

For students new to research, reach out to our office! We encourage students to spend some time with our "Get Started" toolkit on our website. There is a short video that students can watch, and then they can schedule a follow-up consultation with OUR staff to discuss next steps. The OUR is here to help with all aspects of research, from helping students get started to presenting at Discover USC.

For students in their first or second year on the Columbia campus, the Magellan Journey program can jump-start the undergraduate research experience by assisting students with finding a research mentor and providing funding for student salary.

What do you think is the role of faculty mentors and the OUR staff in exposing students to research?

Our outstanding faculty, along with their research teams, are the linchpin of meaningful undergraduate research experiences – faculty provide the research opportunities, training and mentorship that is critical for success. Faculty often weave their own research experiences into their lectures, which is a wonderful way to introduce students to research.

Exposing students to undergraduate research is an important part of the OUR's mission. The OUR team works closely with many campus partners to share research opportunities with students. OUR outreach efforts often involve the Magellan Ambassadors presenting at University 101 classes, student organization meetings and tabling events. Attending Discover USC and visiting different posters is also a great way for students to be exposed to a wide variety of research topics.

A group photo of the Office of Undergraduate Research's team: Whitney Cagle, Briahnna Ismail, Dr. Lauren Clark, and Tricia Kramer (left to right). (Photo provided by Whitney Cagle)

What are some qualities you value in an undergraduate student researcher? What are some of your expectations?

In terms of expectations, students must be willing to learn and have an interest in the research area. I appreciate students who ask lots of questions and try to understand where their project fits into the larger picture. Enthusiasm for the project and sense of humor are always helpful. I admire students who are willing to try something completely new. The quintessential quality that unites all students involved in undergraduate research is curiosity, which is ultimately what drives research.

Speaking of positive experiences, how do you think students can make the most of the research experiences, even when they may be doubting themselves or hesitating?

Once students are involved in research, I would encourage them to take advantage of every opportunity that it leads to. If there is an opportunity to present at a conference, do it! You never know who you will meet or what connections you will make. If you have an opportunity to publish, do it!

Because research progress is often circuitous and not linear, it is very common to doubt oneself when something is not working. The key is to have mentors who can help you work through the research issue and the feelings of self-doubt. It helps to know other students involved in research so that you can share your experiences with each other. The OUR team is also here to listen and provide encouragement!

Want to get started in research at USC?

More information from the Office of Undergraduate Research

1. Find a faculty research mentor

2. Embark on your research journey

- Register your project
- Apply for funding
- Share your work

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Personality and Recycling:

Do Different Personalities Affect People's Recycling Attitude?

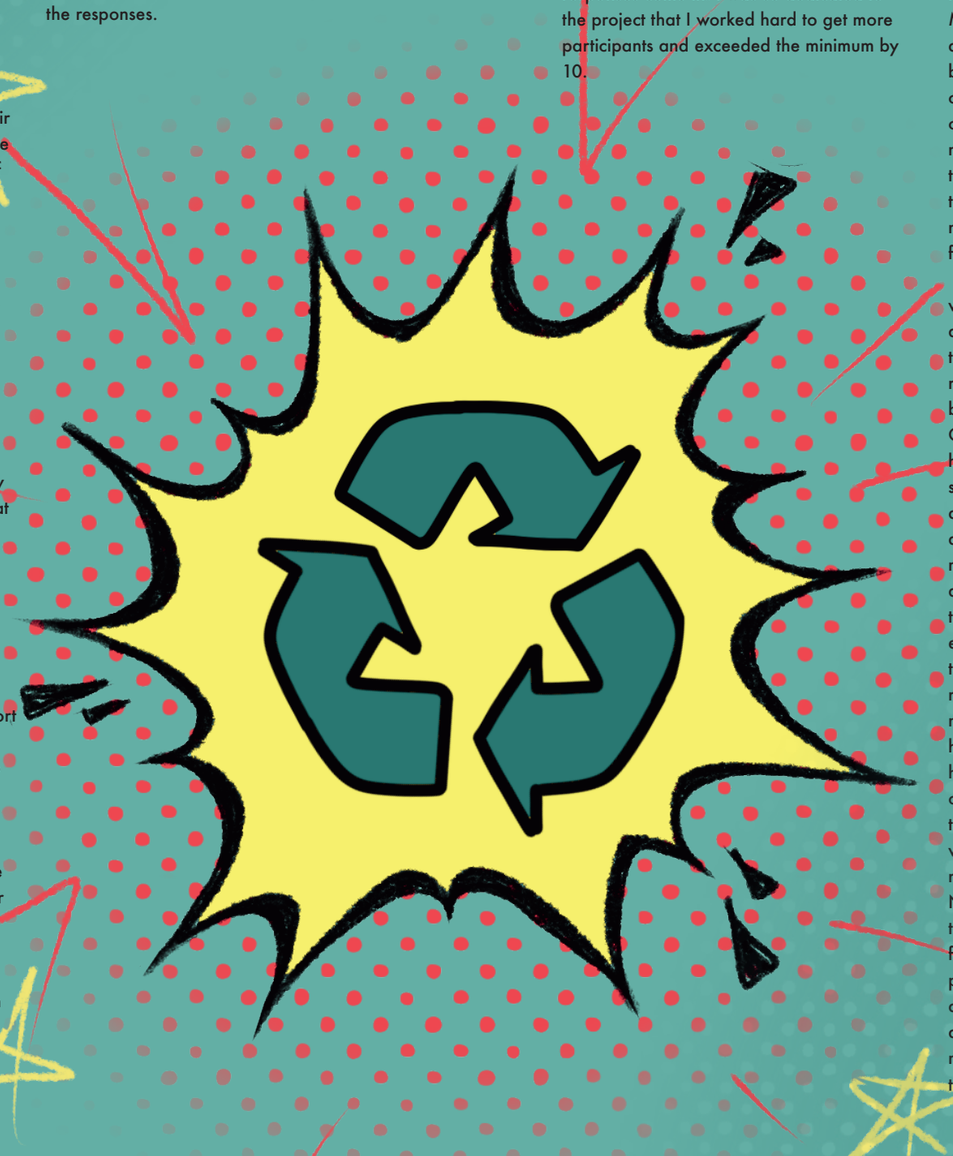
Written by Tze-Shiang (Shawn) Lin, Student Researcher - Edited by Madelyn Weston, and Daniela Buniak Lopez - Designed by Polly Tappan - Featuring Tze-Shiang (Shawn) Lin, Psychology major, Statistics minor, Class of 2024

My name is Tze-Shiang Lin; I go by Shawn. I am an international student coming from Taiwan. I'm in my junior year, and my plan is to go to graduate school in psychology after graduation. I have great interest in the interactions between human beings and their environments. By environment, I am referring to the bigger frame in all kinds of senses, including our natural surroundings, work places, interior designs, and even societies—every tangible and intangible setting that we people are inside of. My other interests are in behavior, learning, and decision making.

Originally, this research was a final paper for my psychology class PSYC 228 Laboratory in Psychology. My mentor, professor Melanie Palomares PhD., pointed out that since I have found a significant result, I could try to publish my work! And since I have been thinking about pursuing a Ph.D. in psychology, the project was considered a great chance for me to start getting involved in research. At the time of my project, I was thinking about adding a concentration in environmental psychology. As an international student, one of the environment related topics that I would encounter everyday is recycling. It wasn't long before I noticed a difference in people's recycling habits in the United States and in my home country Taiwan. While there are efforts on USC's campus to promote environmental protection and recycling such as the Office of Sustainability, I have observed that most people on campus are not very willing to spend an extra effort to recycle. What was more, in the apartment complex I am living in, there are several giant containers. I used to think that some of the containers go to recycling, so I have been throwing away my trash and recycling differently. Then one day I realized that there is no recycling at all, everything goes to trash! It was quite a shock for me.

I was most curious about the reasoning behind why people do or do not recycle. Does recycling go hand in hand with their different adaptations of life such as values, emotional patterns, drives, and interests, etc.? Are people of different personalities also divergent in terms of recycling habits? I would really like to find out. Nevertheless, one major problem I faced was that recycling habits are difficult to trace and measure, and it would require a lot more resources from me to actually conduct research in it. I would need either a naturalistic observation or a randomized experiment if I were to measure people's recycling behaviors. Therefore, instead of examining people's recycling behaviors, I thought I could look into people's attitudes towards recycling, which is steadily quantifiable as well. As a result, my question became "is there a correlation between people's personality traits and their recycling attitudes?" I was hoping to first see if it is possible to identify a certain group of people that are potentially more willing to recycle. Noteworthy here is that one may think attitude leads to behavior, however, this belief is usually not supported by psychological research. Quite the contrary, the relationship between attitude and the actual behavior still remains vague and unsure and in many instances it is behavior that affects attitude.

Furthermore, since I was not able to offer any compensation to the participants, I had to limit the time of survey completion to 15-20 minutes. This meant that I had to shorten my questionnaire. I found two surveys on the PsychTest database, one was the Big Five Personality Trait Short Questionnaire, and the other was the Recycling Attitudes Questionnaire. I trimmed the surveys to about 2/3 in length so that completion time would be within 20 minutes. In the Big Five Personality Trait Short Questionnaire, depending on their highest scores I would assign each participants into one of the five personalities: openness (O), conscientiousness (C), extraversion (E), agreeableness (A), and neuroticism (N). Amongst them, Openness is the degree one is comfortable with new experiences. As for Conscientiousness, it describes the quality of one being responsible for themselves. Extraversion is how sociable someone is, especially with new people, and focuses on how someone processes outward/inward thinking. Agreeableness is the degree to which one tends to agree with someone and/or being flexible, namely how willing one is to comply with others. Neuroticism can be thought of as having a nervous personality/easily disturbed. In my research, all participants completed a two-part survey where the personality survey was assigned by the researcher first, followed by the recycling attitude questionnaire. In the future I could also try switching the order of the questionnaires to see how that might affect the responses.



After I completed designing my survey, I started asking my friends and people around me to fill out my survey by sharing a QR code or through flyers. In order to balance my sample, I tried to survey an equal number of international and U.S. students. The first exciting moment for me was when my sample size reached 31, which is the essential amount for sampling distribution to be normal. Immediately I put all of the responses into the Statistical Package for the Social Sciences (SPSS), a computer software widely used by psychologists to conduct statistical tests and analysis, which was also required for the class. Then I would conduct an analysis of variance (ANOVA), a statistical test to examine whether the mean recycling attitude scores for each personality type are the same, or different from one another. Later on, simply out of curiosity I would run an ANOVA whenever I had new responses come in. I was so dedicated to the project that I worked hard to get more participants and exceeded the minimum by 10.

Finally, I found a statistically significant result for conscientiousness (C), which indicated that people who have a conscientiousness personality scored on average higher in the recycling attitude questionnaire. This outcome aligned with my hypothesis, the results concluded that people who are conscientious have on average a more positive attitude towards recycling.

Now I have identified conscientiousness as the personality trait that has more positive recycling attitudes, what's next? One of the good applications of this study is that in the future, we could make conscientious people our prioritized target audience so that limited resources could result in maximized effects on them in encouraging recycle behaviors. There are certain ways we could advertise recycling, for instance, we could come up with slogans. Slogans are effective because they resonate with people psychologically. Many historically successful slogans or advertisements have psychological reasoning behind them. I kept all of this in mind when conducting my research in hopes that if we can get conscientious people to participate more actively in recycling, then those around them could in turn be influenced. I assume that those who are high in agreeableness may join next after seeing their conscientious friends participate in recycling behaviors.

With all being said, my research was definitely limited. First, like I mentioned above, my research did not look directly at the relationship between personality and recycling behavior, rather at the relationship between personality and recycling attitude. Oftentimes, people would tell you that they have a certain attitude or viewpoint towards something, but chances are, they may not actually do so accordingly. I'd say if you ask anyone whether recycling is important, most would agree it's important, but may not actually take actions to recycle. Secondly, the number of responses I collected for each personality type is quite uneven, and they tend to fall in one or two categories. I remember having only a few responses for neuroticism (N), while for openness (O) I had more than 10 responses. Ideally I would have wished to obtain an equal number of responses in each personality category to make the result more accurate. In other words, I would have loved to have, say 8 responses for all five different personalities. Nonetheless, this would undoubtedly lead to the need of a much greater sample size, for one is not capable of predicting people's personalities, nor can one assign participants a personality. I had a hard time obtaining an ideal sample when I was recruiting my participants, because it is possible that there are just fewer people who fall under neuroticism that would be willing to participate in my research simply by chance. In the future, with more time and monetary resources at hand, I would definitely want to study people's recycling behavior instead of their attitudes. Perhaps I could offer participants drinks in recyclable containers while I have them complete the personality survey, and collect data on how they throw away the containers.

Having completed research as the final paper for my PSYC 228 class broke the barrier between me and conducting research because I used to think of researching as something grand, formal and terrifying. Yet treating it as a class assignment really made conducting research more approachable. Now, I am more confident in myself doing research. Completing this research project has also solidified my interests in doing research. When I first started college, I thought about going to graduate school. This undergraduate research experience exposed myself to research, and it allowed me to know if doing research is something for me, something I would like to pursue as a career. Turns out that I actually felt excited and engaged with the research. Currently, I am participating as an undergraduate research assistant in professors Dr. Wedell and Dr. Shinkareva's lab in the Institute for Mind and Brain (IMB). Our lab studies primarily decision making, and it is a great opportunity for me to step forward and learn about different research instruments such as Electrocardiogram (ECG) that measures heart rate, and Electromyography (EMG) that measures muscle response. Through my participation in conducting research and in the lab, I have gained many hands-on research experience that will not only prepare me for future challenges but also for my goal in pursuing a Ph.D. in psychology and career opportunities.

SHAWN LIN

Correlations of Alcohol Consumption with Feelings of Stress and Anxiety in College Students

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Abstract

College students commonly experience issues due to alcohol abuse, heightened stress, and anxiety. This study was conducted to investigate the association between alcohol consumption, stress, and anxiety among students at the University of South Carolina. It was hypothesized that students who consume more alcohol would demonstrate increased levels of stress and anxiety. Open to undergraduate and graduate students enrolled in the University of South Carolina, a 1–3-minute survey was distributed, containing questions adapted from established alcohol consumption and coping screenings. The five-point Likert scale was used for the survey questions, with answer choices ranging from "Strongly Disagree" to "Strongly Agree." There were 35 participants, the majority of which aged between 19 to 22 years: 30 females, 2 males, and 3 non-binary/ non-conforming individuals. Based on the results of a Pearson Correlation analysis, a significant positive correlation between alcohol consumption and the combined factors of stress and feelings of anxiety levels among college students was found ($r(33) = 0.417$, $p = 0.013$, two-tailed), demonstrating that as alcohol consumption increases, stress and anxiety among college students also increase. Although this does not prove that increased alcohol use causes stress and anxiety, this study shows a strong association between these variables. These findings have practical implications for alleviating negative experiences that college students may face, which could be implemented by improving the campus Counseling and Psychiatry resources as well as instilling substance abuse prevention programs and stress management sessions through required training for incoming freshmen at the university.

Keywords: alcohol, stress, anxiety, college students

Correlations of Alcohol with Stress and Anxiety in College

Alcohol consumption, stress, and anxiety are common among college students. The purpose of this study is to determine the relationship between alcohol use and stress and anxiety levels among college students and evaluate whether there is a correlation between these components that students often face during the college experience. Previous studies have claimed that there is a causal relationship between higher levels of stress and drinking rates, including among college students. In a study conducted in Swedish universities for first-year students, it was observed that using alcohol as a coping mechanism leads to various problems including increased stress. After implementing alcohol intervention programs, stressors and other alcohol-related issues decreased (Andersson et al., 2009). These findings display how the reduction of alcohol consumption through intervention leads to decreases in stress in college students.

Not only is increased alcohol use associated with increased stress levels, but both of these factors also lead to problematic drinking. This is illustrated in another study that focused on college freshmen, who were surveyed after their first experience of underage drinking to report their levels of stress, which found that alcohol consumption and stress levels "independently and additively predict drinking problems," including underaged drinking, substance abuse, and related violations (O'Hare & Sherrer, 2006). The current study investigates the relationship between alcohol and stress for college students regardless of class level. It does not distinguish between those that recently had their first experience of drinking, those that had been drinking for a while, or those that were drinking while underage. Interestingly, increased alcohol consumption is also observed as a consequence of high-stress levels. In a study where college students self-reported their mood and stress when they consumed alcohol, results showed that students with a more negative mood and stress were more likely to drink alcohol the next day (Luk et al., 2018). Luk et al. found that people are more likely to consume alcohol after a stressful event.

Based on existing literature, there is a connection between alcohol use and increased stress levels in college students, who may partake in risky drinking behaviors after a stressful event. Upon implementation of substance abuse intervention programs, both alcohol use and stress levels decreased (Andersson et al., 2009). While these studies provide an understanding of the relationship between drinking and stress, the use of alcohol as a coping mechanism and increased feelings of anxiety, a common issue that often appears alongside stress among college students, are topics that have not fully been explored. It is predicted that there will be a positive relationship between alcohol consumption and the combined factors of stress and feelings of anxiety including stress factors, among college students. This study will also assess the effectiveness and prevalence of alcohol as a coping mechanism for students who face high levels of stress.

Zainab Nathani

Methods

Participants

This study was open to any student attending the University of South Carolina, and it was distributed electronically through a Google Form to a variety of different student groups. There were 35 participants, of which the mean age was 20 years old. Thirty participants (86%) identified as female, 2 (6%) participants identified as male, and 3 (8%) participants identified as non-binary/non-conforming. Information regarding ethnicity, class level, GPA, majors/minors, and hometown was also obtained in this survey. About 67% of participants were white, 21% were Asian, 10% were Black, and 2% preferred not to say. When it came to class level, 15 participants (43%) were seniors, 8 participants were juniors (32%), 7 were sophomores (22%), and 1 was a freshman (3%). The majority of participants had a GPA of 3.9 or higher, and the majors, minors, and hometowns of participants varied greatly.

Procedure

After the link to the survey was sent to different groups on campus, participants were able to access the survey, which was estimated to be completed within one to three minutes. First, participants read an informed consent procedure that explained the purpose of the study, the length of the survey, and the confidentiality agreement. Then they answered questions about stress and feelings of anxiety after which they answered questions about alcohol. Then, questions about demographics (i.e. race, ethnicity, gender, etc.) were asked. Finally, at the end of the survey, a debriefing statement detailing the anonymity of participants as well as campus-provided mental health resources are provided.

Measures

Measure #1: Alcohol Use

I used a modified version of the Alcoholism Substance Abuse Screening Questionnaire, which is designed to examine substance dependence in college students (Svanum & McGrew, 1995). Most of these questions were presented in a Likert scale format and scored on an averaged-based scale. Participants were asked a variety of questions, including how many drinks they consume in a week, when they consume the most drinks, and if drinking affects their mood in a positive or negative way (1 = more negative, 5 = more positive).

Measure #2: Stress and Feelings of Anxiety

To measure stress and feelings of anxiety in college students, I used three questions from the 40-item revised COPE inventory ("COPE (complete version)," n.d.). Presented in a Likert scale format, the questions were scored on an averaged-based scale. Two of the questions asked participants to rate their current level of stress and feelings of anxiety from 1 to 5 (1 = not stressed at all, 5 = very stressed out). The third question asked participants if they usually take direct action towards finding a solution when experiencing a stressful event and to answer from 1 to 5 (1 = I usually don't do this at all, 5 = I usually do this a lot).

Results

A Pearson Correlation analysis, a common technique used to measure linear correlation between two factors. The analysis was conducted to determine whether there was a relationship between alcohol consumption ($M = 5.029$, $SD = 2.760$) and the combined factors of stress and feelings of anxiety ($M = 9.257$, $SD = 2.343$) in college students at the University of South Carolina (Table 1).

Table 1

Descriptive Statistics

Descriptive Statistics

	Mean	Std. Deviation	N
stress_anxiety_sum	9.2571	2.34324	35
alcohol_consumption	5.0286	2.75986	35

Descriptive statistics were calculated for alcohol consumption and stress and feelings of anxiety measures for 35 participants. Standard deviations and means are displayed.

The independent variable was alcohol consumption and the dependent variable was the combined factors of stress and feelings of anxiety. The results suggest that there is a significant positive relationship, $r(33) = 0.417$, $p = 0.013$, two-tailed. Based on a significance level of $p = 0.05$, the results are significant (Table 2).

Table 2

Correlations

Correlations

		stress_anxiety_sum	alcohol_consumption
stress_anxiety_sum	Pearson Correlation	1	.417*
	Sig. (2-tailed)		.013
	N	35	35
alcohol_consumption	Pearson Correlation	.417*	1
	Sig. (2-tailed)	.013	
	N	35	35

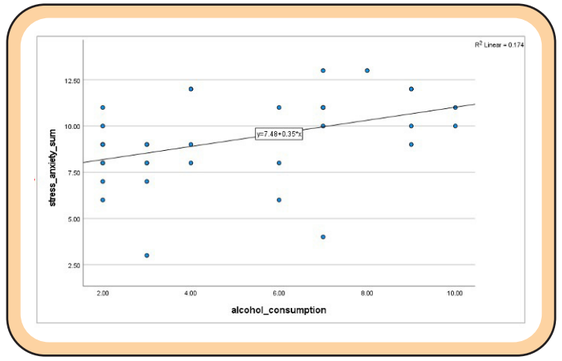
*. Correlation is significant at the 0.05 level (2-tailed).

Pearson Correlations were calculated for alcohol consumption and stress and feelings of anxiety.

These results indicate that as alcohol consumption increases, stress and feelings of anxiety among college students also increase. A scatterplot was created to display this relationship and the linear representation shows a strong positive correlation (Figure 1).

Figure 1

Scatterplot Depicting the Correlation Between Alcohol Consumption and the Combined Factors of Stress and Feelings of Anxiety



A scatterplot was created with a positive linear relationship to show the correlation between alcohol consumption and stress and feelings of anxiety.

Discussion

A conjunctive analysis of stress and feelings of anxiety versus alcohol consumption was conducted to study the relationship between these variables. It was hypothesized that college students who consume more alcohol will have increased levels of stress and feelings of anxiety. The results are based on the Pearson correlation coefficient (r=0.417), indicating a positive correlation between stress, feelings of anxiety, and alcohol consumption, thereby supporting the hypothesis. While there may be some outliers in the participant results, this could be explained by outside factors contributing to alcohol consumption habits as well as feelings of stress and anxiety, which would need to be studied further. The outcomes of this study align with those of prior studies, contributing further evidence of a strong relationship between alcohol consumption and the collaborative factors of stress and feelings of anxiety levels among college students. A starting point is also offered for feelings of anxiety to be examined individually with alcohol consumption in future research. Although the results of this research study cannot support a causal relationship for alcohol use when compared to stress and feelings of anxiety, the study provides further evidence justifying the association between these variables.

Unfortunately, the sample size for this study was low, which weakened support for the hypothesis. Another limitation is that the participants were not an accurate representation of the students at the University of South Carolina. There was not a lot of diversity among the participants, most of which were seniors, females, and white, causing a sampling bias. This hurts external validity because it may not accurately represent the student population at the University of South Carolina. The small sample size and lack of diverse perspectives could be attributed to the way the survey was dispersed to students, and for future studies, a larger and more variable distribution could be implemented by including it on the Psychology Participant Pool, a database of surveys for psychology students at the University of South Carolina through which students may receive extra credit by their course professors.

There are various implications for this study. The data and information gained could be used to identify and decrease sources of stress, feelings of anxiety, and alcohol abuse, all of which are very common issues on college campuses that need to be addressed. This could be accomplished by expanding the counseling and psychiatry resources on campus to include workshops to help with substance use as well as major stressors in students' lives, making sure to touch upon how they relate to each other. Specifically, programs could be implemented targeting the student population that deals with daily stressors and unhealthy coping mechanisms. In one study that took place in Swedish universities, interventions including primary alcohol misuse prevention and stress management programs reduced stress-related concerns for freshmen students (Andersson et al., 2009). To promote early intervention, incoming freshmen could be introduced to required substance use and healthy relationships training in future years so that they could start off their college experience with a better understanding of these topics. This is especially important because as the results in one previous study have shown that stress affects those who recently change their alcohol consumption level in a specific way (O'Hare & Sherrer, 2006). In the future, this research could be replicated on a larger scale and include strategies on how students may learn effective coping skills for stress and feelings of anxiety such as mindfulness, breathing exercises, maintaining hobbies, and eating well-balanced meals. Further research should be done to determine whether there is a causal relationship between alcohol consumption and stress and feelings of anxiety individually rather than additively by conducting an ANOVA analysis. Reasons why students may choose to turn to alcohol when they are stressed may also be studied, considering factors such as quality of life, financial background, and time management skills. This project provided support for previous studies with the supplemental factor of feelings of anxiety, and additional valuable conclusions could be made with future improvements.

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