27th Annual Westmont College

Student Research Symposium

WESTMONT

April 20, 2023
3:30-5:00 p.m.

Winter Hall
Westmont College

2023 Spring Research Symposium

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Winter Hall
Westmont College

One of the hallmarks of Westmont College's academic program is the opportunity for undergraduate students to work directly with faculty on research and scholarly projects. Work presented at the Student Research Symposium includes student work conducted during the past year, from the divisions of the Humanities, Social Sciences, and the Natural and Behavioral Sciences. The purpose of this symposium is to celebrate the noteworthy accomplishments of Westmont students.

With special appreciation for support from the Office of the Provost

PARTICIPANTS

Sydney Azzarello '23
Sociology
Poster #13

John Baker '23
Chemistry
Poster #28

Leannah Barreto '23
Psychology
Poster #6

Lydia Bastian '23
Sociology
Poster #21

Charlie Bloom '25
Kinesiology
Poster #4

Nicole Bond '23
Chemistry
Poster #28

Riley Bream '24
Psychology
Poster #3

Kennedy Burkett '26
Psychology
Poster #3

Eliana Choi '23
Psychology
Poster #20

Kylen Christiansen '23
Sociology
Poster #26

Ashley Compton '23
Psychology
Poster #3

Paige Freeburg '24
Biology
Poster #16

Esther Green '23
Psychology
Poster #18

Emma Hammond '23
Biology
Poster #16

Ciboney Hellenbrand '24
Kinesiology
Poster #4

Madison Huntington '24
History
Poster #10

Daniel Jang '23
Sociology
Poster #8

Siena Keck '23
Sociology
Poster #12

Bailey Lemmon '23
Communication Studies
Poster #2

Michael Lew '24
Physics
Poster #25

Jordan Lewicki '23
Sociology
Poster #11

Brooke Murphy '23
Environmental Studies
Poster #5

Camdon Park '25
Biology
Poster #16

Theo Patterson '23
Biology
Poster #1

Ashley Pitzen '25
Kinesiology
Poster #4

Mariyan Popov '24
Chemistry
Poster #28

Gabriela Rego '23
Psychology
Poster #7

Carli Roberson '23
Psychology
Poster #14a & b

Lillian Robinson '24
Biology
Poster #24

Sean Ryan '24
Physics
Poster #23

McKenna Sawitz '23
Psychology
Poster #22

David Schaupp '23
Sociology
Poster #21

Victoria Silva '23
Psychology
Poster #27

Naomi Siragusa '24
Physics
Poster #25

Isaac Song '26
Chemistry
Poster #28

Madeline Stiles '24
Chemistry
Poster #9

Noah Tseng '24
Biology
Poster #16

Evan Tsuei '23
Economics & Business
Poster #19

Ashley Vanyo '23
Psychology
Poster #17

Raymond Vasquez '23
Economics and Business
Poster #15

Arianne Vethan '25
Biology
Poster #16

Samie Watanabe '25
Chemistry
Poster #28

Monique Welch '23
Biology
Poster #24

Grace Williams '24
Biology
Poster #16

English Department Readers:
Sydney Abraham '23
Caleb Beeghly '23
Luke Spicer '23
Margaret Taylor '23

ABSTRACTS

1. Examining Sclerite Size and Distribution in *Thesea*: Implications for Taxonomic Structure and Species Identification

Theo Patterson '23
Kurt Hildebrandt '22
Amarilis Falconi-Kroeker '22

Biology
Professor Beth Horvath

The genus *Thesea* comprises a group of gorgonian soft corals that play a crucial role in creating ecological stratification and refuges for a variety of marine creatures on an otherwise barren seafloor. However, due to their deep-sea habitat, very little is known about the taxonomy and ecology of *Thesea*, particularly for Pacific species. In this study, we examined sclerite size and distribution in *Thesea* species using light microscope photography. Our objective is to restructure the taxonomic classification of the genus and establish new standards for identifying specific species. We collaborated with the Santa Barbara Museum of Natural History to obtain samples from their research collection and utilized their scanning electron microscope as needed. Our findings suggest that sclerite size and distribution patterns across branches are crucial for differentiating between species of *Thesea*. Our results also provide insights into the taxonomy of the genus and offer a foundation for future studies on the ecology of *Thesea* in a warming and acidifying ocean.

2. Iranian Activists' Use of Social Media for Social and Cultural Change

Bailey Lemmon '23

Communication Studies
Dr. Elizabeth Gardner

Since September 2023, anti-hijab protests have erupted around Iran following the death of Mahsa Amini. The 22-year-old Iranian woman died in the custody of Iran's morality police for improperly veiling. Because of the gender-based segregation in Iran and the momentous power of the Internet, are Iranian activists able to inspire social and cultural changes among the people through their use of social media? This question is analyzed through the recent anti-government protests following Mahsa Amini's death in Iran spearheaded by women. I argue that, yes, Iranian activists' use of social media to display their protest and upheaval prompts social and cultural change for three reasons: (1) social media reaches people all around the country, rather than mostly in major cities; (2) it rallies and unites others to join the public protests; and (3) it inspires women and girls, particularly, to pursue a lifestyle they originally thought was implausible or inappropriate.

3. Correlation Between HRV And Cognitive Bias

Ashley Compton '23
Riley Bream '24
Kennedy Burkett '26

Psychology
Dr. Gewnhi Park

The purpose of this study is to better understand whether/how cognitive bias is correlated to self-regulation indexed by the physiological measure called heart rate variability. More specifically, we were interested in the relationship between HRV and system one, which is the automatic system that is instinctive and system two which is a logical and complex cognitive system. In order to measure this, we measured participants' HRV baseline data, after which they completed multiple tasks and questionnaires that assessed multiple types of cognitive bias. These include framing, hindsight bias, overclaiming bias, B.S. receptivity, confirmatory thinking, and misinformation bias. The predicted hypothesis states that those with lower HRV, indicating lower self-regulatory function, would show greater cognitive bias. These results will help us identify heart rate variability as a physiological correlate of cognitive bias.

4. Investigations of Fetal Mortality and Injury Following a Motor Vehicle Accident

Charlie Bloom '25
Ciboney Hellenbrand '24
Ashley Pitzen '25

Kinesiology
Dr. Adam Goodworth

Pregnant women involved in motor vehicle accidents (MVA) risk major injury to their fetuses. Studies show a high rate of fetal death and complications following even mild crashes. We performed a literature review of injury prevalence, impact of speed, injury mechanisms, and new seat belt designs. We then categorize the evolution of research focus and seatbelt options and directly compare a fetus to expectant mother deaths across studies. We found studies focusing on mechanisms of injury were most common in 1990-early 2000s; while most studies on prevalence have been after 2000. If a pregnant person is in a crash, fetal death is between 2 and 19 times higher for the fetus than the mother. The odds of fetal injury are much higher than adults as well across all speeds. Seat belt designs specifically for pregnant occupants may be a feasible path forward.

5. Gendered Work: Continuity of Cherokee Foodways in the Life of a Twentieth Century Cherokee Woman

Brooke Murphy '23

Environmental Studies
Dr. Marianne Robins

This research paper, titled "Gendered Work: Continuity of Cherokee Foodways in the Life of a 20th-Century Cherokee Woman" will examine the continuity of traditional Cherokee foodways from the nineteenth to the mid-twentieth century, focusing on the role of Cherokee women in the preservation of these traditions. The research will show how the federal land allotment policy reinforced Eurocentric gender norms and how Cherokee women have challenged these norms through their role as keepers of traditional foodways and food ethics. By examining the continuity of Cherokee foodways and food ethics through the life of a 20th-century Cherokee woman, this research will contribute to a deeper understanding of the ways in which gender, land, and food are intertwined in Cherokee culture.

6. The Effect of Racially Outgroup Faces on Working Memory: Physiological and Social Correlates

Leannah Barreto '23

Psychology
Dr. Gewnhi Park

This experiment investigated the relationship between cardiac activity, right-wing authoritarianism, and working memory. Participants' cardiac activity was measured using heart rate variability completing a valence categorization task. During the task, participants categorized positive or negative words while ignoring task-irrelevant distractor faces. The task was performed under high and low working memory loads, with congruent and incongruent conditions. Lastly, participants completed the Right-Wing Authoritarianism Scale. It is hypothesized that participants will have impaired performance in categorizing words in the incongruent trials under high working memory load compared to the congruent trials. There will be no difference in performance between congruent and incongruent trials under low working memory load. Participants with lower resting HRV will have slower reaction times and/or less accuracy in the incongruent trials compared to those with higher resting HRV. Additionally, those with lower HRV and lower task performance will exhibit higher levels of right-wing authoritarianism, while those with higher HRV and higher task performance will exhibit lower levels of right-wing authoritarianism.

7. The Effects of Religious Priming on Gratitude to God

Gabriela Rego '23

Psychology
Dr. Gewnhi Park

This study seeks to better understand the effect of religious priming on gratitude to God.

Religiosity was explicitly primed by reading 9 Bible verses, this priming was the independent variable. The control condition received no priming. The Religious Gratitude Scale (Krause & Hayward, 2015) was used to measure feelings of gratitude to God. All participants indicated their religious affiliation and completed 2 questionnaires to assess their religious commitment: The Duke University Religion Index (DUREL) (Koeing & Bussing, 2010) and The Religious Commitment Inventory (King & Hunt, 1969). It is expected that those in the religious prime group will report greater feelings of gratitude toward God. The results are expected to be stronger among individuals who believe in God and are committed to their faith. These results would be important because according to previous research, expressing gratitude to God improves overall wellbeing.

Keywords: Gratitude, gratitude to God, religious priming, wellbeing

8. Finding Common Ground: Differences in Perceptions of Campus Climate Based on Race and What We Can Do About It.

Daniel Jang '23

Sociology
Dr. Blake Kent

Though research has demonstrated patterns of growing racial segregation in American Neighborhoods, college campuses have been growing more diverse. However, dropout rates have been significantly higher for students of color, and a prominent reason students give for dropping out is because of a hostile campus environment. Furthermore, studies have shown how students of color are more likely to rate their campus worse than their white counterparts when asked about the campus racial climate. Though many possible solutions to improve campus climate have been researched, one avenue that has not been thoroughly investigated is the role of campus religious organizations as a space to facilitate an openness to diversity. The aim of this research is to do an initial investigation of what differences there may be between students who participate in voluntary campus religious organizations and those that do not, and if there is a racial difference in this possible association.

9. Conjunction Junction, What's Your Function(alization): Transition Metal-Catalyzed C-H Functionalization

Madeline Stiles '23
Braden Chaffin '22
Colby Young '23

Chemistry
Dr. Amanda Silberstein

Have you ever wondered about the science behind the making of medications? These medications are composed of a network of carbon-carbon bonds that are integral to the medication's ability to function. Our research focuses on making those carbon-carbon bonds using oxygen-derived directing groups and transition metal catalysts. This specific area of Chemistry is called C-H functionalization, which breaks a stable carbon-hydrogen bond and installs a carbon-carbon bond. Researching these reactions and evaluating the chemical interactions is vital in equipping chemists with the tools needed to make medications and other compounds of interest. C-H functionalization is particularly helpful because it takes an unreactive bond and causes it to react, bypassing other reactions needed to otherwise transform the bond. We studied a variety of oxygen-derived directing groups, several different catalysts and numerous other reaction parameters in our attempts to develop a new C-H functionalization.

10. What's the Pointe? The Paradox of American Ballet in the 20th Century

Madison Huntington '24

History
Dr. Marianne Robins
Dr. Alastair Su

The artform and culture of ballet underwent significant change in the United States during the 20th century as its institutions developed. The establishment of companies, such as the New York City Ballet and the San Francisco Ballet, speak to the extent of investment in American ballet during this time. Much historiography has focused on the role of George Balanchine in this process and role of ballet as a political tool during the cold war, with special emphasis on how ballet affected the conflict. This article seeks to demonstrate how a wider range of political factors may have affected ballet itself. A review of three critical periods—the 1930s, 1950-1965, and post-1965—illustrates how political intentions established, legitimized, and then destroyed the initial vision of American ballet as a means of human flourishing. By analyzing this trajectory in light of broader political and institutional contexts, the historically and presently observed culture of ascetic thinness perpetuated within ballet can be understood as a departure from initial artistic motivations as a result of later political forces, rather than an inescapable, fundamental doctrine of the artform in America.

11. Embodiment and The American Ideal

Jordan Lewicki '23

Sociology
Dr. Blake Kent

Centering around the themes of embodiment and intersectionality, this study analyzes the portrayal of beauty ideals in the intersection of gender, race and body image in the top 5 publicly traded online clothing brands as presented in the spring/summer edition in 2023. In recent years, there have been attempts to investigate how media is shaped by culture and in turn, shapes culture. Trends were investigated using a grounded theory approach through a visual content analysis of a total of 150 images. The majority of themes included skin tone, body type, and gender displays. These themes presented themselves in varied ways between men's and women's apparel categories. Findings of the study suggest social implications for which bodies are valued and promoted.

12. "Real Adventure", Real Environmental Crisis: A Content Analysis of Patagonia Catalogs Over the Years

Siena Keck '23

Sociology
Dr. Blake Kent

Deep into the climate crisis, green marketing is everywhere– but the role of business in stopping the biggest environmental catastrophe of our time is debated. However, through its counter-cultural values and humorous, adventure-driven ways, Patagonia has led the way in minimizing harm and activating consumers to take charge of environmental and social causes. While much research has been conducted on green marketing and representation in the apparel industry, little focus has looked at Patagonia catalogs specifically through a lens of the human relationship with the natural environment. My research looks at who is centered in the "alternative" environmentalism of the brand and the role of "real adventure" and deviance in inspiring a story to save the world– or as much of the natural world as possible. Through conducting a visual content analysis, I will discover if such themes and representations have changed in the catalogs' history from 1988 to today.

13. The Impacts of Engagement with Marginalized Communities on Narratives of Faith

Sydney Azzarello '23

Sociology
Dr. Blake Kent

This paper analyzes data collected from qualitative interviews with students in their third and fourth years at a Christian liberal arts college. Grounded in theories of lived religion and embodiment theory, this research seeks to understand how engagement with marginalized populations impacts the formation of narratives of faith during emerging adulthood. The results suggest a strong link between growing horizontal faith maturity in students who identify as and/or have sustained engagement with marginalized or traditionally 'othered' groups during emerging adulthood.

14a. The Use of Transcranial Magnetic Stimulation (TMS) To Decrease Cognitive Symptoms of Depression and Anxiety

Carli Roberson '23

Psychology
Dr. Gewnhi Park
Celine Parris, Clinic Director of Theramind Center

Transcranial magnetic stimulation (TMS) has been consistently studied to test its effects on the psychological symptoms of depression and anxiety. The current research focused on whether TMS treatment would improve the cognitive symptoms of depression and anxiety. I hypothesize that the neuropsychological testing scores would improve, showing cognitive improvement after two weeks of TMS therapy. Two patients have been recruited from Theramind Center of Santa Barbara and have gone through two rounds of neuropsychological testing including a shortened battery testing of each domain. After the treatment therapy, there were no significant results showing that two weeks of TMS sufficiently affected cognitive symptoms in the patients. Further research is necessary to examine if the application of TMS can go further than the treatment of the psychological symptoms of depression and anxiety.

14b. The Effect of Alcohol on Cognition in Patients with Parkinson's Disease

Carli Roberson '23

Psychology
Dr. Gewnhi Park
Dr. Steve Rogers

While there does seem to be a negative effect of alcohol consumption on the motor symptoms of Parkinson's disease (PD), there is limited research on the specific features of cognition affected among patients who consume alcohol and are diagnosed with PD. A total of 141 patients diagnosed with PD participated in neuropsychological assessment and reported their weekly alcohol intake. Those with PD who consume alcohol, even occasionally, performed significantly worse on frontal executive tasks, *ps* < .03, and had weaker scores on visuospatial tests, *ps* < .05, than those not consuming any alcohol. These findings suggest any alcohol use may have a negative impact on the frontal-executive abilities of those with PD and select aspects of their visuospatial functions and visual memory, even when a prior history of alcohol misuse is considered or factored. These findings can be used to better guide treatment and research for those with PD.

15. Born of the Crucible: A Comparative Study into What Makes Leaders Great

Raymond Vasquez '23

Economics and Business
Dr. Gayle D. Beebe

Leaders throughout history have come in all shapes and sizes, of all backgrounds, and of different circumstances. From Anwar Sadat of Egypt to Abraham Lincoln of the United States, each leader came to be known for their impact on their people and changed history as we know it. This study seeks to examine a host of different leaders to identify common traits and styles that famous leaders have, while also showing that a great leader is the combination of the right person at the right time. By looking into the daily tendencies of popular leaders, as well as how they reacted to difficult situations while in positions of leadership, we learn more about the sacrifices needed to be a great leader to apply in our own management styles. So, what turns a good leader into a great one, and are you the next one?

16. Sars-Cov-2 Spike Protein Reduces Burst Activities in Neurons Measured by Micro-Electrode Arrays

Paige Freeburg '24
Emma Hammond '23
Camdon Park '25
Noah Tseng '24
Arianne Vethan '25
Grace Williams '24

Biology
Dr. Yi-Fan Lu

Despite efforts to understand SARS-COV-2 and its pathogenicity, its viral impact on the neurological systems remains unclear. This study aims to identify the influence of spike proteins from SARS-COV-2 on the phenotypes of neurons, quantified by *in-vitro* multi-well micro-electrode arrays. Whole-brain neurons from newborn P1 mice were plated on multi-well micro-electrode arrays (MEAs) before the administration of recombinant spike proteins (S1 and S2 subunits respectively). Neuronal signals were measured by the MEA and transmitted to a computer for analysis. Among the phenotypic features analyzed, we discovered that the S1 subunit of the spike protein decreases the mean burst numbers observed on each electrode. However, the S2 subunit did not exhibit the same effect. Our data suggests that the receptor binding domain (RBD) of S1 is responsible for the reduction of burst activities in neurons, and spike proteins may play an important role in altering neuronal phenotypes in early development.

17. The Effects of Physical Exercise on Mind Wandering and ADHD

Ashley Vanyo '23

Psychology
Dr. Gewnhi Park

Research on physical exercise indicates it is beneficial to emotional, mental, and physical health. The main goal of this study was to examine whether physical exercise, suggested enhancing self-regulatory function, would help reduce mind-wandering phenomena and attention-deficit/hyperactivity disorder (ADHD) symptoms. We recruited participants from the physical education elective course named fit for life. In the course, students performed equivalent physical exercise training required by the course instructor approximately three times per week over the course of 8 weeks. Participants completed a cognitive task that assessed their mind-wandering and a self-reported ADHD scale before and after the 8 weeks of exercise training. We hypothesized that after 8-weeks of physical exercise training, participants would show (1) a reduction in mind-wandering phenomena, and (2) reduced scores on ADHD self-report assessments.

18. Non-Invasive Vagal Nerve Stimulation via the Feelzing Patch and Memory

Esther Green '23

Psychology
Dr. Gewnhi Park

The goal of the study was to examine the effect of non-invasive vagal nerve stimulation methods on memory including false memory. Participants were randomly assigned to the vagal stimulation condition and the control condition. We used the Feelzing energy patch, a patch placed behind the ear, to stimulate nerves of the autonomic system including the vagus nerve. To examine the effect of vagal stimulation on memory, participants completed the Deese-Roediger-McDermott (DRM) paradigm. False memory would be evaluated by whether or not participants falsely remembered the lure words that were not previously presented during the study phase. It is hypothesized that participants with the non-invasive vagal nerve stimulation would have a higher recall and recognition of true memories compared to control participants not exposed to vagal stimulation. In addition, participants with the Feelzing patch would recall and recognize less false memories.

Keywords: vagal, memory, stimulation, autonomic, nerve

19. Developing Ethical and Economic Justifications for Wealth and Welfare to Guide Public Policy

Evan Tsuei '23

Economics & Business
Dr. Edd Noell

This research aims to collect and evaluate philosophical and economic arguments supporting both possession of extreme wealth and redistribution of said wealth to synthesize a morally and economically responsible policy framework for combating income inequality and poverty. Post-1930s, the United States has employed a limited welfare state to support the "War on Poverty," using government transfers to address economic hardship. However, these transfers are usually excluded from Census income estimations, giving politicians a flawed understanding of present inequality and poverty levels, which then leads to policy misjudgments that could infringe on individual liberties or ineffectively target key issues. Pulling from Biblical, classical, Austrian, libertarian and mainstream economic thought, this research explores how lawmakers might best incorporate and balance respect for rightfully-earned wealth with the moral obligation of charity in policy deliberations. Such a framework lends itself to basic income systems, which show moderate success in various limited implementations.

20. The Effect of Exercise on Physiological, Cognitive, and Emotional Processes

Eliana Choi '23

Psychology
Dr. Gewnhi Park

This study examined the effect of exercise on cognitive and emotional processing. The participants were undergraduate students enrolled in the Fitness for Life (PEA-032) program. We assessed participants' heart rates, and participants completed a cognitive task that assessed negativity attentional bias and trait anxiety questionnaires. All participants were tested before and after their exercise program. Once the data was collected before the study, the participants would begin their exercise routine for eight to nine weeks. After the program is finished, the participants will come back to the study and take the same physiological measure and questionnaires. The hypothesis is that the participants will show more effective physiological responses, better cognitive tasks, and reduced scores on the anxiety self-report assessments. This study will further our understanding of the effects of exercise on physiological and cognitive processing involved in trait anxiety.

21. Perceptions, Experiences, and Hardships of Race at a Predominantly White, Elite, Christian Liberal Arts Institution

Lydia Bastian '23
David Schaupp '23

Sociology
Dr. Blake Kent

Our qualitative, interview-based study analyzes the experiences of 24 students who attend a predominantly white Christian college on the west coast. Past research has shown that people of color continue to experience racism today, and therefore we take an approach based on Critical Race Theory, structural racism and intersectionality. Our study expands on the experiences of these students by comparing and contrasting the experiences of Blacks, Latina/o's, Asian Americans, mixed ethnicities, and White students. Through interviews we analyze common themes felt among students of color and how they navigate spaces on campus. Our study analyzes the lived experiences of students of color and demonstrates that it is emotionally difficult to be at a predominantly white university. We offer several recommendations based on student experiences and previous literature for ways that this private college could improve and create a more welcoming and diverse campus.

22. Cognition of Time Perception

McKenna Sawitz '23

Psychology
Dr. Gwen Park

Time perception is a characteristic of the mind that is not well understood. This study focused on the relationship between trait anxiety and time perception of emotionally neutral and threatening faces. Furthermore, I investigated the role that heart rate variability played in the relationship. After measuring heart rate, participants were presented with neutral and fearful faces for a predetermined amount of time and asked to determine their estimated duration by pressing a keyboard. It is hypothesized that individuals with higher trait anxiety would generally overestimate the duration of time that negative stimuli were presented for. The overestimation would be more pronounced in individuals with lower resting HRV associated with reduced self-regulatory function. The results would show that time perception of emotional stimuli is influenced by trait anxiety and heart rate variability.

23. Higgs Boson Decay to Photon and Missing Transverse Momentum in Gluon-Gluon Fusion at Atlas

Sean Ryan '24

Physics
Dr. Ben Carlson

Higgs boson decays to a photon and missing transverse momentum are motivated by beyond the Standard Model (BSM) theories. Past searches for dark photons at ATLAS and CMS have used the associated production and vector boson fusion production modes. This poster discusses a new approach that relies on the gluon-gluon fusion production mode.

24. Westmont Biodiversity: Documenting Campus Fungi

Lilian Robinson '24
Monique Welch '23

Biology
Dr. Amanda Sparkman

The Westmont Biodiversity initiative (www.westmontbiodiversity.com) seeks to improve our understanding of the species that inhabit our campus. Additionally, we encourage engagement with these species through artistic expression, such as poetry and visual art. We also aim to serve as a resource for students who are pursuing independent projects or research related to the local ecosystem. By fostering greater awareness of the biodiversity present on campus, we hope to inspire continued study and protection of our environment. Our goal for this research project was to document fungi that could be included in our online database of organisms. We were able to identify 9 species in 9 genera and 7 families. We also found 15 unidentified species. In the future, to increase our number of identified species we plan to note the characteristics of the underside, gills, spore color, stem, presence or absence of a ring, smell, and habitat.

25. Interacting Python Program for General Physics Lab Students

Michael Lew '24
Naomi Siragusa '24

Physics
Dr. Ben Carlson

Beginning in the second year of the Physics program, students use Python in their upper-division courses to analyze and interpret data, and perform mathematical procedures. To strengthen computational fluency within the Physics department, we sought to facilitate an experience that introduced students to Python to perform analyses on their data. General physics laboratories are great courses to begin to implement these methods. We created interactive Jupyter notebooks that introduced certain topics to students and how they relate to Python such as uncertainty propagation, introduction to the matplotlib package, and applying non-linear fits to graphs. This not only prepares students to succeed in their major-content courses but gives them a valuable tool to use in their future research projects.

26. Student Faith Experiences at Westmont

Kylen Christiansen '23

Sociology
Dr. Blake Kent

At Christian colleges, students experience a wide variety of faith integration in various Sectors of academics and social life. This study investigates the role of different factors which personally impact a student's faith over a 4-year trajectory while attending Westmont. In this study I address two primary research questions, 1. How does Westmont inform campus-wide norms of Christian faith within their student body what impact does this have on a student's personal faith? 2. How do relational experiences at Westmont influence a student's faith? I answer these questions based on 15 semi-structured, in-depth interviews. Each respondent additionally completed a short demographic survey. Analysis of data was completed using transcription, coding, visual mapping, and memos. Factors which were found to impact student faith development include chapel, classes (within and outside of major), peers, mentors, and various external religious experiences.

27. The Effects of HRV on Gender and Cognitive Functioning

Victoria Silva '23

Psychology
Dr. Gewnhi Park

Previous research reported that when affective moods were elevated, working memory capacity decreased in men (Ozawa et al., 2014). This study examined gender differences in working memory when emotionally negative and neutral stimuli were presented prior to a working memory task. Furthermore, we examined the role that heart rate variability (HRV) played. We replicated the previous finding showing that participants would show impaired performance (e.g., slower reaction times or less accuracy) on a working memory task after emotionally negative distractors were presented. We hypothesized that this pattern would be more pronounced in women than men. Furthermore, we hypothesized that the impact of emotionally negative stimuli on working memory would be greater in people with lower resting HRV, indicating reduced self-regulatory function. Twenty male and twenty female college students were recruited to complete this study. The findings help us to better understand gender differences in the impact of emotion on working memory and the physiological correlates involved.

28. The Importance of Order in the Epitaxial Growth of Biphenyl Overlayer

Isaac Song '26
Samie Watanabe '25
Nicole Bond '23
John Baker '23
Mariyan Popov '24

Chemistry
Dr. Allan Nishimura

The degree of ordering in the underlayer that is necessary to cause epitaxial growth of a biphenyl overlayer by vapor deposition is reported. In this study, two cyclic molecules, cyclohexane and benzene were used as underlayer to observe potential epitaxial growth of a biphenyl overlayer. Although both cyclohexane and benzene do form ordered crystals, cyclohexane undergoes a phase change to a glass just below its desorption temperature on al 2 o 3 and this disorder does not allow expitxial growth of biphenyl. In a similar way, benzene forms strong benzene-biphenyl 1:1 excited state complexes via van der Waals interaction that negates any potential epitaxial ordering of the biphenyl adlayer.

READINGS IN WINTER HALL 216

Original Fiction And Poetry Selections From English Capstone

Sydney Abraham, 2023 English

Caleb Beeghly, 2023 English

Luke Spicer, 2023 English

Margaret Taylor, 2023 English & Political Science

OFFICE OF THE PROVOST
955 La Paz Road
Santa Barbara, CA 93108
www.westmont.edu
805-565-6000