Letter from the Editors

The Undergraduate Research and Creative Activities (URCA) Journal was created in the Spring of 2019 to highlight the research achievements of UCSB undergraduate students. It has been a pleasure to work on the second edition of the journal. We received amazing submissions and were pleased to work with all the authors who were accepted for this edition.

We cannot emphasize enough how proud we are of all our fellow peers who experienced obstacles like no other this year. Due to the COVID-19 pandemic, the university had to close its doors and shift to remote learning for the rest of the academic year as a necessary measure to ensure the safety of the campus community. Unfortunately, this also forced the closure of on-campus labs and suspension of many students’ independent research projects. We all heard stories from students who scrambled to gather data or quickly adapt their experimental methods to meet the circumstances. Despite everything going on, from the pandemic to the protests for the racial equality, UCSB students expressed resilience and patience during a time of uncertainty.

The articles in this publication are just a glimpse of the excellent research conducted by undergraduate students at UCSB. We received about 25 submissions from Math, Life, and Physical Sciences, Humanities and Fine Arts, and Social Sciences undergraduates. While all submissions demonstrated passion and originality, we felt as though the entries selected for publication exceeded all our expectations. We made our decisions based on the paper’s engagement, organization, and intellectual significance. Afterwards, we worked with the authors to edit their work for content, style, and grammar mechanics to ensure the papers were in the best shape for publication. Above all, we worked to ensure that the papers were written in a language that could be understood by a general audience. Please feel free to watch this Zoom conversation of us to learn more about our role and the publication process.

We want to thank Professor Anne Charity-Hudley for working with us well into the summer on this project, and the authors for their patience and trust as we worked on the second edition of the journal. We hope you enjoy reading the content produced by these brilliant scholars as much as we did.

Sincerely,
Gabby Birog
Rosalia Hernandez
Brenda Wu

About the Editors

Gabby Birog

Gabby recently graduated from UCSB with a Bachelor of Art (B.A.) in History and a Bachelor of Science (B.S.) in Psychological and Brain Sciences. In addition to her work as a Peer Mentor for the Undergraduate Research & Creative Activities Office, she served as a research assistant under Dr. Heejung Kim in the Cultural Psychology Lab and wrote her senior thesis on the criminalization of mental illness in the criminal justice system. She hopes to continue furthering her interest in the intersections between mental health, social justice, and the law. Currently, she is a first year law student at UC Berkeley School of Law where she works as an editor on the Berkeley Journal of Criminal Law, a committee member of the Peer Wellness Coalition, and a clinic counselor at the Workers’ Rights Disability Law Clinic.

Brenda Wu

Brenda is a recent graduate from UCSB with a Bachelor of Science (B.S.) in Biopsychology and a minor in Applied Psychology. Throughout her time at UCSB, she served as a Peer Mentor for the Undergraduate Research & Creative Activities Office as well as a research assistant under Dr. Ron Keiflin in the Department of Psychological and Brain Sciences (where she researched the neural basis of context-dependent reward prediction learning). Given her love for neuroscience, she will be gaining more experience as a lab technician at UCSD and hopes to eventually obtain a Ph.D. in Neuroscience. Aside from academics, she enjoys exploring the outdoors, listening to true crime podcasts on Spotify, and playing with her newly-adopted kitten Oli.

Rosalia Hernandez

Rosalia is currently an undergraduate in the Department of Statistics and Applied Probability majoring in actuarial science. She is passionate about diversity in STEM and uses her role as a Peer Mentor for the Undergraduate Research & Creative Activities Office to encourage students who are interested in research to find mentors and projects. As a McNair scholar she does research under the guidance of Dr. Michael Ludkovski in the Department of Statistics and Applied Probability on longevity forecasting among demographic groups in the United States. She plans to continue her education through graduate school and obtain a PhD in statistics with the long term goal of becoming a professor. In her spare time she likes painting, reading Chicano literature, and swimming.

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The Role of Pitch, Duration, and Lexical Tone in the Production of Voiced and Voiceless Burmese Nasals

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Abstract

Burmese is a language of South-East Asia featuring a contrast between voiced and voiceless nasals. Voicing is an articulatory phenomenon involving the vibration of vocal folds and is the mechanism behind contrastive sounds in English such as /p/-/b/ and /t/-/d/; this contrast pertains to nasals—a typically voiced category including English consonants such as /m/ and /n/—in Burmese. I conducted a production study examining acoustic properties associated with the voicing contrast in Burmese nasals. The results confirmed well attested patterns found in the literature and includes a novel finding regarding an interaction between three factors and its correlation with voicing.
Introduction
In the world’s languages, sounds may be categorized into perceptually distinct units called phonemes that are used to differentiate words. Phonemes may be as different as /t/ and /d/, used to distinguish the English words lack and tack, or as similar as /t/ and /d/, which distinguish pairs of words like to-and do. The consonants /t/ and /d/ draw on a distinction called voicing, which results from the timing of vocal fold vibration relative to the production of a consonant. The vocal folds are located in the larynx and modulate airflow from the lungs during speech production. Consonants are voiced if the vocal folds vibrate before the release of the consonant, as in /d/, and are voiceless if vocal fold vibration occurs after its release, as in /t/. Burmese is a language of South-East Asia (spoken primarily in Myanmar) featuring a typologically unusual voicing contrast between its nasals. Nasals are a group of consonants including the English /m/, /n/, and /ŋ/ (orthographically represented as ng). They are produced by a lowering of the velum, a sluggish articulator located at the back of the mouth, which, when lowered allows for airflow to pass through the nasal cavity. This is in combination with gestures of other articulators involved in producing consonants, such as the lips, tongue, teeth, and palate.

In Burmese, nasals are found at four places of articulation, the location within the oral cavity where articulators form a constriction for a consonant: 1. Bilabials, which are produced by movement of the lips, resulting in consonants such as /b/ and /β/. 2. Alveolars, which involve contact between the tongue tip and the alveolar ridge, a protruded area at the roof of the mouth behind the teeth, and include /t/, /s/, and /n/. 3. Palatals, which involve contact between the tongue body and the hard palate, and include /k/, the consonant in the middle of Spanish words such as baño. 4. Velars, which are produced by contact between the back of the tongue and the velum, and include /k/ and /ŋ/. Voicing contrast occurs at all these locations in Burmese nasals.

Although relatively rare, voiceless nasals have been observed in various regions of the world, with concentrations in South-East Asia, Central America, the Pacific Northwest, and even in Iceland. Typically, they can be divided into two categories based on their timing of voicing (i.e. vocal fold vibration): one consisting of two components, a voiceless and voiced phase, and the other consisting of only a voiceless phase (Bhaskararao & Ladefoged 1991). Languages differ in how their voiceless nasals are produced, with Burmese falling under the initial category, which are also known as pre-aspirated nasals, since they are characterized by a noisy voiceless period followed by a voiced murmur (Chirkova et al. 2019, Dantsuji 1984, Ladefoged & Maddieson 1996, Maddieson 1984b, Ohala 1975, Ohala & Ohala 1993). Differing articulatory constrictions and the resulting airflow from oral and nasal cavities mark the contrast between the two nasal categories. Most descriptions of the voiceless period within pre-aspirated nasals only mention the presence of nasal airflow (Bhaskararao & Ladefoged 1991, Ladefoged & Maddieson 1996, Ohala 1975, Ohala & Ohala 1993). However, the voiceless phase consists of both nasal and oral airflow. The articulators remain open for the duration of the voiceless phase, only closing for the brief voiced phase preceding the vowel (Blankenship et al. 1993, Chirkova et al. 2019). Following this is the fully voiced segment consisting of only nasal airflow. This stands in contrast with fully voiceless nasals (found in languages, such as Angami, a language of South-East Asia) also known as voiceless aspirated nasals, which actually consist of two phases as well (Blankenship et al. 1993, Chirkova et al. 2019). While the oral cavity remains closed throughout most of the nasal—thus only allowing for nasal airflow—there is an opening of the articulatory stricture at the end of the nasal resulting in a brief partially voiced period with simultaneous oral and nasal airflow. The voiceless portions of these nasals do not help convey information about place of articulation since the nasal cavity, from which the turbulent airflow is released, lacks the capacity for varying location or degree of constriction (Bhaskararao & Ladefoged 1991, Chirkova et al. 2019, Dantsuji 1986, Ohala 1975). Noise spectrums cannot be generated by cavities leading up to the nostril, and the resulting nasal airflow is low in intensity (Ohala 1975, Ohala & Ohala 1993). Therefore, listeners cannot reliably perceive differences between places of articulation based on the voiceless phase alone. The voiceless phase thus mainly serves to signal a contrast with voiced nasals. On the other hand, the voiced phase serves as a transition to the following vowel and signals place of articulation (Bhaskararao & Ladefoged 1991, Dantsuji 1984, 1986, Ladefoged & Maddieson 1996, Ohala 1975, Ohala & Ohala 1993). The offglide in the transition to the following nasal displays cues characteristic of different points of articulation. Dantsuji (1986) segmented the voiced phase into three portions—onset, murmur, and transition—and found that the murmured and transition phases carry formant values indicative of manner and place of articulation. The present study examines acoustic properties involved in signaling the contrast between voiced and voiceless nasals in Burmese, found for example in the minimal pair ‘tread/step on’ vs. /m/ ‘drive away/banish’. A pilot study suggested that the presence of the voiceless phase alone is not the only cue on which listeners rely to perceive voicing categories. Cues such as pitch, the perceptual correlate of fundamental frequency (the rate of vocal fold vibration), and duration seemed to be...
promising variables which are equally important: preliminary data suggested that voiceless nasals are produced with higher pitch and are longer than their voiced counterparts. Therefore, I also examined interactions between pitch and duration to assess the relative contribution of the two cues to signaling the contrast in voicing. An added focus of interest is the fact that pitch is also used to signal tone contrasts between words in Burmese. For example, the word /má/ ‘wrong/incorrect’ is produced with a high tone and the word /mà/ ‘locative; order (sth)’ is produced with a low tone. The use of pitch both to help convey contrasts in voicing of nasals and also to mark tonal contrasts in vowels raises questions about its capacity (or “functional load”) to signal both types of contrasts.

Autonomy

This production experiment focuses on only individual words to limit the number of variables possibly influencing the results. The first step was procuring a list of minimal pairs to present to speakers. I mainly sourced words from Judson’s English and Burmese dictionary (Judson & Stevenson 1953) and the Burmese index on wiktionary (Index:Burmese in Wiktionary). The results were 67 tokens containing nasals, with 21 minimal pairs. Of the 67 tokens, 33 occurred word-initially and 14 were in word-medial position. Words were varied in terms of the place of articulation of the nasal (bilabial, alveolar, palatal, velar) and the tone category (high, low, checked, and creaky). No voiced equivalents were collected for the word-medial tokens and so they were discarded from the analysis. Twenty-three more multisyllabic words with voiced and voiceless tokens in similar medial environments were also used as fillers. Following this, I consulted a native Burmese speaker to verify that all the tokens were likely to be recognized by Burmese speakers as words, resulting in 1 medial voiceless nasal and 8 filler nasal tokens being discarded. Overall, 81 tokens were randomly sorted over four iterations, resulting in 324 total tokens. I recorded four speakers reading from this list on a Marantz pmd 660 solid-state recorder and an AKG 51/SHER c520 headworn condenser microphone. In total, there were 1296 data points. Of these, 416 tokens were left out of the analysis due to them being fillers, occurring in medial position (since there is no comparison with voiced equivalents), or being errors, leaving a total of 880 data points. Nasals occurring in words targeted for analysis were segmented using Praat (Boersma and Weenink 2020) into three relevant phases: voiceless segment, voiced segment, and following vowel. The segmentation is illustrated in Figures 1a, which contains a spectrogram and an overlaid pitch trace (the red line) for a voiced nasal and 1b, which depicts a voiceless nasal. I ran a Praat script gathering duration measurements for each phase alongside pitch measurements at the beginning, medial, and ending points of each phase. Pitch measurements were taken at the three points within each phase to provide a representation of the time course of pitch throughout each phase. These measurements, as well as speaker, gender, lexical item, place of articulation, the presence of a voiceless phase, tone, location (whether medial or initial), the preceding vowel, the following vowel, the presence vs. absence of a coda consonant (the consonant following the vowel), and the coda consonant (the phoneme) are the resulting variables.

Results & Discussion

Variables were analyzed using a mixed-effects model through the glmer function in R (R core team 2017). I chose a mixed-effects model to account for speaker variation, since it does not use fixed parameters. Therefore, if a speaker has a lower than average pitch reading in 1a.—but exhibits a pitch difference between 1a. and 1b. similar to other speakers—the outlying measurement may not be indicative of a trend, but instead is an effect of another variable. This was intended to illustrate the effectiveness of certain variables as predictors of whether a nasal is voiced or voiceless. In order to determine the most relevant variables, I used ggplot (Wickham 2016) to compare pitch and duration measurement—since they contain the only numeric values—in relation to other variables. Pitch and duration values were used as predictors of other dimensions, such as tone, voicing, place of articulation, and vowel quality, by comparing them across subcategories of these variables. These comparisons are also split by voicing category (for all comparisons except voicing) to examine whether voicing also influences measurement results. This allowed me to observe potentially two- or three-way interactions...
between any of these variables. One pattern can be observed in duration comparisons between different voicing categories. The duration of voiceless nasals, including both voiced and voiceless phases, are on average twice as long as voiced nasals. This is depicted in Figure 2a. Comparisons of only the voiced phases of both nasals reveal that the durations of voiced nasals are overall greater than the voiced phase of voiceless nasals. This is depicted in Figure 2b.

Pitch results also showed some correlation with voicing. Overall pitch movement throughout the word, calculated across tone categories, is depicted in Figure 3a. Voiced nasals are on the left and voiceless nasals on the right in each plot comprising the figure. Voiceless nasals with a starting pitch of 200hz decrease to a pitch of 180hz at the point of transition to the following vowel. Voiced nasals typically have a roughly level pitch profile that starts lower than the voiceless nasal and ends on nearly the same level at the midpoint of the following vowel. This pattern was consistent across all lexical tones, although, again, variations were observed, primarily in the pitch during the nasal. The difference between pitch was greatest in creaky and checked tones. For creaky tone, the pitch of voiceless nasals averaged between 246hz at the onset, while it was 173hz for voiced nasals. For checked tone, the difference is almost identical with voiceless nasals having an average pitch of 243hz, while voiced nasals have an average of 173hz. The gap decreased in high tones, with voiceless nasals averaging 221hz and voiced nasals 171hz. Differences in pitch are smallest in low tones, with an average pitch of 185hz for voiceless nasals and 157hz for voiced nasals. Onset pitch across lexical tones is illustrated in Figure 3b.

Other interactions between pitch or tone with specific lexical items and surrounding vowel quality exhibited no differences. Two variables, coda consonant and place of articulation, showed minor effects. Duration is shorter and pitch is higher for words ending in glottal stops, i.e. those with a checked tone. The duration of all words ending in a glottal stop is below 250 milliseconds, while most words without a coda have a duration greater than 250 milliseconds. Meanwhile, the pitch of words ending in a glottal stop averages between 175hz to 250hz, while words without a coda glottal stop only average between 150hz to 200hz.

Thus, glmer models were created including some or all of the following independent variables: pitch, duration, tone, place
of articulation, and coda consonant. The dependent variable is the presence of a voiceless phase (which differentiates the voicing categories), and the random effect of speaker is included. Pitch measurements at the mid-point of the consonant are the predictor since there is an effect on pitch at onset positions. ANOVA tests were used to compare these models. Models including coda consonants (AIC = 740.15) were less efficient than models without it (AIC = 735.80, p<.001). Furthermore, models including place (AIC = 750.2) were revealed to be less efficient than models excluding it (AIC = 736.8, p<.001). Thus, both variables were excluded.

Afterwards, interactions between all three variables were added into the predictions. Two more variables were added—one for the interaction between pitch and duration, and another for the interaction of tone category and duration. This was decided after more ANOVA tests with models containing differently ordered interactions between these three variables. None of them proved to be significantly better than the other (p = 1). However, interactions with duration as the common point resulted in the lowest AIC of 746.06. This is in comparison to an AIC of 765.29 when pitch was the common point, and an AIC of 765.40 when it was pitch. Therefore, the final model has pitch, tone, duration of the voiced phase, the interaction between pitch and duration of the voiced phase, and the interaction between tone and duration of the voiced phase as the final independent variables.

Results from this mixed effects model demonstrate that pitch and duration measurements produce different results depending on lexical tone. Figure 4 depicts four plots demonstrating interactions between tone, pitch, and duration. Each plot illustrates the effect of pitch and duration on voicing for a specific tone. Duration and pitch are scaled to account for the diversity of values. The gradient represents the probability of a voiced or voiceless outcome, with yellow associated with predicted voicelessness and blue with predicted voicing. Some consistent observations can be made for all lexical tones. At any given pitch, increased duration of the voiced phase leads to a greater probability of a nasal being voiceless while decreased duration of the voiced phase leads to a greater probability of a nasal being voiceless. Conversely, at any given duration, there is a positive correlation between high pitch and a voiceless prediction and between low pitch and a voiced prediction. Furthermore, once pitch values reach a certain threshold, any increase in duration does not affect the outcome of voicing; there is a very high likelihood that these nasals are voiceless. This threshold is highest for the checked tone, and then for high and low tones in decreasing order. Creaky tone stands out in showing a greater reliance on duration of the voiced phase. Thus, given sufficient duration of the voiced phase, the probability that, regardless of pitch level, the nasal is voiced is stronger than for the other three tones. This may be due to the fact that creaky and checked tones share similar pitch contours, but are differentiated by the fact that creaky tone possesses a greater duration (Watkins 2003). Shorter length also appears to predict voicelessness at lower pitch levels in creaky tone in comparison to other tones. For high tone, extremely short duration of the voiced phase with high pitch actually increases the likelihood of a voiceless prediction unlike the pattern observed for the other three tones.

Conclusion

Initial results regarding pitch and duration confirmed previous findings in the literature. Mainly, voiceless nasals have greater duration and higher pitch than voiced ones. The current study demonstrates that this effect on pitch is localized to the nasal itself and does not perseverate through the following vowel. Rather, voicing of the consonant appears to have no effect on the pitch of the following vowel, aside from the period of transition from the nasal to the vowel.

An important novel finding of this study involves the interaction between pitch, duration of the voicing phase, and tone. Increased pitch in general increases the likelihood of a nasal being voiceless whereas increased duration of the voiced phase increases the probability of a nasal being a member of the voiced cate-
gory. However, the interaction between pitch and duration of the voiced phase differs between tones. Results from the present study shed light on how a typologically unusual type of linguistic contrast is realized phonetically along different acoustic dimensions.

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I would like to thank my mentors and participants who helped make this study possible. I am grateful to my mentor, Matthew K. Gordon, who guided me from the beginning stages of this project. I am grateful for his time, patience, and support, for arranging meetings, and reviewing drafts. Special thanks to Phillip G. Rogers, for tutoring me in R and helping me flesh out the methodology to produce these results. I also thank Caroline Crouch for helping inspire this project by making me aware of this topic’s research potential. I want to express my sincerest gratitude to all the participants of this project, for helping me and allowing me to work on their language: San San Myint, Cynthie Tin Oo, Aung Tun Myint, and Dino Myint.

Works Cited


Meijas, Ulises (2006) “Teaching Social Software with Social Software,” Innovate: Journal of Online Education; Vol. 2, Iss. 5, Article 2. Available at: https://nsuworks.nova.edu/innovate/ vol2/iss5/2


About the Author
Ludwig Adiswoyo is a 4th year linguistics major and TESOL minor. He is graduating this spring with an honors thesis. Afterwards, he intends to teach English before pursuing a PhD in linguistics with a focus on language documentation.
How Participation in STEM Focused Programming Resonates with Youth

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Abstract
Engaging youth in Science, Technology, Engineering, and Mathematics (STEM) fields earlier rather than later is important for developing a stronger foundation in these disciplines. The STEMinist project aims to engage young girls (fourth through sixth grade) in science and engineering through interactions with female scientists at the University of California, Santa Barbara. This study aims to identify what the girls take away from their interactions with the scientists and their visits to the lab to inform after-school STEM programming development. This paper presents themes that emerged from the analysis of participant interviews after completing the program.

Introduction
Engaging youth in Science, Technology, Engineering, and Mathematics (STEM) fields earlier rather than later is important for developing a stronger foundation in these disciplines. Research has shown that this early exposure to STEM better prepares children for school and their future chosen careers (Maltese & Tai, 2011). However, it is even more important to encourage youth to participate in STEM at young ages before they become discouraged from it by socially constructed gender stereotypes. According to research done by the Office of the Chief Economist (OCE), which ended up being published in a report by the U.S. Department of Commerce, “women filled 47 percent of all U.S. jobs in 2015 but held only 24 percent of STEM jobs” (Noonan, 2017). This massive gender imbalance seen in the national workplace, especially in STEM fields, reflects a greater issue with society and the influence that gender stereotypes have on career choices. A study (Selimbegovic et al., 2007) in France investigated the influence of perceived gender stereotypes on self-evaluation in math and science for children between the ages of thirteen and nineteen. While results showed no significant differences in science and math grades between males and females, females who believed in gender stereotypes within STEM fields had significantly lower self-evaluation scores than females who held no belief in these stereotypes (Selimbegovic et al., 2007). When asked if they were considering pursuing higher education in math and science-related subjects, similar findings emerged: the number of females that believed in the gender stereotype and wished to pursue further education in STEM fields was significantly lower than the number of females who did not have a belief in gender stereotypes (Selimbegovic et al., 2007). These findings reveal that gender stereotypes are significant contributors to the lack of women representation in STEM fields. Therefore, it is important to encourage girls to pursue STEM at an early age. By exposing girls at young ages to STEM and creating environments where they are empowered and supported, we can create an environment where this bias is minimized, if not eradicated. This is possible with hands-on, project-based, collaborative learning that allows young students to get involved and work through the material. These experiences help to further instill confidence in STEM and potentially an admiration for it as well. Providing young girls with strong female role models and mentors in STEM is also important and effective. Seeing high-achieving women flourishing in STEM helps girls feel like they belong in these fields. It is based on these ideas, and the commitment to encourage girls towards STEM that the STEMinist Project (pseudonym) was instituted.
Research Context

The STEMinist Project is a program that brings approximately 30 girls in fourth through sixth grade (ages eight to eleven) to the University of California, Santa Barbara campus, to introduce and engage them in STEM-related experiments and activities. In 2019, in the third year of this program, there were 21 youth participants. These participants spent around 20 weeks developing interview questions, interviewing female scientists and engineers on campus, touring labs, and partaking in hands-on STEM activities that related to the scientists’ research interests. For the first ten weeks of the program, the youth participants spent one hour each week on the university campus, with a new female researcher learning about their journeys in STEM as well as their research interests. Additionally, participants had the opportunity to ask these researchers interview questions they developed. The next ten weeks of the program involved writing and art sessions reflecting on their visits and interviews with the female scientists. These efforts culminated in a book written and illustrated by the girls for fellow youth (Arya & McBeath, 2018). During these few weeks, in between working on their books, the girls also partake in a few additional STEM field trips and end the program with a presentation of their work for family and community members.

Existing Research

Impact of After-School STEM Programs

Education reform has been increasingly more important in the last few years, especially concerning STEM education. An understanding of STEM is necessary for overcoming the certain circumstances and complex issues we face as a society, such as climate change, genetically modified foods, and water pollution, for example (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, 2006). Consequently, there has been an increase in before-school, after-school, and summer STEM programs to supplement classroom STEM learning. One study (Krishnamurthi et al., 2014) found seven main themes that best demonstrated the impacts of out-of-school STEM programs, which were to successfully engage students in STEM investigation, retain a diverse population of students, strengthen student interest in STEM in and out of school, teach STEM-relevant life and career skills (like collaboration and public speaking), demonstrate the value of STEM and its impact on all people, increase awareness for the variety of STEM-related career options, and have a positive impact on academic performance. These programs have many proven benefits and are undoubtedly valuable whether students ultimately strive for careers in STEM or not. An evaluation report of the long-term effects of Project Exploration, after-school and summer STEM programs in Chicago, demonstrated that high-school graduation rates were higher for those who participated in this program than those who did not (Chi et al., 2010). The report also found that alumni of these programs attended college and pursued degrees in STEM-related concentrations at higher rates. However, a research study done in the United Kingdom has found that student interest in science is at its peak around age ten, regardless of gender (Murphy & Beggs, 2005). However, this age also marks the point where interest will start to decline (Murphy & Beggs, 2005). Therefore, Lindahl (2007) concluded that positive experiences in science are most important throughout the elementary school years. Specifically, students form ideas of what their future career might be around the fifth grade, which ends up influencing the field they choose to focus on in high school and college (Lindahl, 2007).

Empowering Women in STEM

Women, some minority groups, and working-class individuals are still largely considered under-represented in STEM careers (National Science Foundation, 2019). Due to the substantial need for increased STEM-related skills in today’s world, the education system has turned to focus on these under-represented groups and on how to best empower and educate them to be competitive in this field, with a unique emphasis on female representation. Even though girls rate science as their favorite subject at a much higher rate than boys do, girls are less likely to aspire to careers in science (ASPIRES Project, 2014). The ASPIRES study from King’s College London found that individuals from families who do not have an interest in or connection to science are uninformed of STEM jobs aside from becoming a scientist, teacher, or doctor. Furthermore, those who are not white, male, and middle-class seem to aspire to pursue STEM-related careers significantly less. Since many families lack an understanding of the potential jobs that are available to those who pursue science and/or also have a lack of interest or knowledge of science themselves, many children are raised to be unaware, and therefore, disinterested themselves. However, when girls are made aware of female scientists and how women are joining STEM fields in increasing numbers, there are positive implications. Shaffer et al. (2013) explored how male and female undergraduate students (ages between 18 and 22) performed on a math test when stereotype threat was manipulated. They found that when students read articles that spoke about how men are favored in math fields, female undergraduates performed considerably worse than those who read articles that highlighted women in STEM and how women and men are almost equally pursuing these careers. The female students that read the equality in STEM articles performed just as well as...
the males, who performed equally as well regardless of the articles they had read. Therefore, this study suggests that the perception of representation is important for women. In fact, research has shown that when women’s perceptions of STEM fields are altered to believe that they are more gender-balanced, women find the field less threatening (Murphy et al., 2007). With the conception that the field is slowly moving towards balanced representation, women could find comfort and reassurance that they are capable of performing just as well as men do.

Data Collection and Analysis
The work presented here is a part of a larger project that follows a Design-Based Implementation Research (DBIR) approach (Penuel et al., 2011). Design-based research follows an iterative development process that is informed by multiple stakeholders to further understand the theory around youth learning and development. For more information about this program’s development, see Nation et al. (2019). Participants of this program were interviewed by undergraduate facilitators whom they worked with over the course of the program using a semi-structured protocol (Drever, 1995) at the start and conclusion of the 20 weeks. This study focused on the post-interviews, which included questions regarding youth experiences and what they remembered from the program. Of the 21 participants in the program that year, 14 agreed to participate in research. Their post-interviews were examined and analyzed for use in this paper using emergent coding informed by grounded theory (Charmaz, 1996). The first round of analysis consisted of establishing common themes that reappeared throughout the interviews. The second round of analysis involved confirming these themes and extracting key quotes that embodied said themes. The last round of analysis was done to ensure that these quotes could be understood with or without context and that the quotes correctly illustrated the themes.

Results

In exploring and evaluating participant reflections about the program, three main themes emerged: connection with the scientific content, the scientific experience, and connection to the personal side of science. These themes are defined in Table 1.

<table>
<thead>
<tr>
<th>Code</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>Personal Connection</td>
<td>The girls exhibited an interest in the personal connections made with the scientists and the facilitators.</td>
</tr>
<tr>
<td>Scientific Experience</td>
<td>The participants demonstrated enthusiasm for the experiences they had in the program.</td>
</tr>
<tr>
<td>Scientific Content Connection</td>
<td>The girls demonstrated an interest in the content or specific topics of scientific lessons.</td>
</tr>
</tbody>
</table>

Personal Connection
Five of the 14 girls interviewed mentioned that learning about the scientists was their favorite experience or was something that they wanted more of in the following years of the program. When reflecting on the interview experience with a female scientist, Faith (pseudonym) stated, "I got surprised when the scientist says their favorite hobby. I thought it was just talking science, but they have all different types of hobbies." Learning about who scientists are, as women, personalizes a seemingly impersonal and, perhaps, strict career. Science can seem like a cold and difficult subject, yet, finding out that scientists have similar hobbies to themselves and have lives not completely dominated by a love for science can be inspiring to young girls who are still curious about the world and interested in multiple things. In addition, these personal connections appear to remain with students throughout the program, with one youth participant commenting, "I remember most that she likes the Harry Potter series. And she studies coral. And she likes pie." Instead of speaking about the research, the personal details of the scientist’s life surprisingly resonated with this participant the most, considering students only met each scientist for one hour weeks before these post-program reflections were collected. She was able to see this scientist as a person who was not just defined by her career. This is significant because it is personifying the profession to a relatable degree and not making it seem as objective.

In addition to recalling and connecting with the personal side of female scientists, one girl desired more opportunities to form these connections claiming, "I just wish we can visit other scientists and learn more about them." Note that she asks to learn more about them and not their research, which indicates the possibility that these youth value the personal connection to female scientists more than the introductions to their research. These interactions allow youth participants to see that being a scientist does not mean you have to abandon all hobbies outside of science and allows them to imagine themselves as future scientists. One example of this comes from a youth who, at the start of the program, claimed she did not want to become a scientist or like science, much like many of the youth participants in this program. However, in the end, she claimed, "I want to be two things now. An actor and a marine biologist." This program presented this participant with something she had never previously considered before and
formed a personal connection for her, allowing her to envision a combination of the two worlds of her choosing.

Representation is important because it dictates what people perceive as achievable. If women and men became doctors, scientists, engineers, and software developers, for instance, in equal numbers, the misconception that men are more capable in STEM-related fields would not exist. This is why it is necessary for young girls to see successful women in high-achieving STEM jobs. This emergent theme illustrates a need youth have for opportunities to develop personal connections to females in STEM, thus allowing STEM professionals to become less distant and a seemingly more attainable career pathway.

Scientific Experience Connection

The primary goal of the STEMinist Program is to expose and engage youth participants in STEM for them to gain familiarity with the subjects. Nine of the 14 girls explicitly used the word “fun” when describing the subject of science, the activities in the program as a whole, or the idea of becoming a scientist. For example, Lily (pseudonym) said, “I like more science because before, science was boring… I didn’t think science was this fun.” She came into the project with the notion that science was boring, and the experiences she shared with the program changed her mind. She did not note a particular activity as more enjoyable than the others, but instead, asserted that the entire subject was fun. It is likely the amalgamation of experiences throughout the entirety of the program that led her to change her mind, rather than one individual lesson or scientist.

Similarly, another participant said, “I started liking science more. And what made me like more science is going here to figure out how different science works… I always thought science was just putting potions together, but science can mean different things now that I’m here.” What specifically made this participant claim to like science more was exploring different branches of science. Again, she did not mention one particular concept as fun but instead found the variety of ways that sciences exist engaging and impactful.

Having youth partake in scientific processes, engage within science, and see it all first-hand gives them a unique perspective into these disciplines. Whether it was the novelty of touching a lobster’s butt, like it was for Delilah (pseudonym), seeing microscopic water bears, which was Grace’s (pseudonym) favorite or using an iPad to see what colors animals see, like Arianna (pseudonym) enjoyed, many girls described experiences when asked about their favorite parts of the program. In fact, three girls mentioned that going to visit the lobsters and getting to touch other marine animals was their favorite experience in the program. This was the only field trip the girls took that did not involve interviewing and learning from a scientist and was purely a trip for the experience. They got to learn about marine science and animals first-hand by exploring and touching the animals personally. For these girls, it might not have been the interaction with people that increased their interest in STEM, but rather how they were engaged with and in activities.

Also, when the girls were asked what they had learned from some of these experiences, many found difficulty in remembering and elaborating on the specifics of the science lessons but reiterated an appreciation for the experiences. Ultimately, these experiences led some girls to gain a greater understanding of science and to see it in a different light. When a participant, Faith (pseudonym), was asked about her scientist, she remembered, “We put soap and other things together, and it made this cool thing,” highlighting the fact that she remembered the experience of science. While she could not articulate the science concepts well and could not recall the end result, she remembered that it was “cool.” Interacting with the science and getting to experiment herself was what was most memorable about her scientist visit. It was not necessarily the science that was impressive, but rather, her participation with it and how it came together. Personal connections to experiences within the field of science are shown to be of great importance to female youth participants and should be valued by program developers as well by increasing opportunities for youth to form these connections.

Scientific Content Connection

The Organisation for Economic Co-operation and Development 2006 forum (OECD, 2006) found that students need to feel the personal relevance of a subject to themselves, society, and the world in order to deem a subject interesting. When one participant, Janie (pseudonym), was asked about what she remembered about the scientist she interviewed, Janie responded, “She studied coral and how it bleached. And how it’s bleached.” This shows that Janie resonated the most with the scientist’s research content during the scientist visit. This connection to the focus of the research being studied was further exhibited when she claimed that she wanted to be a marine biologist because of her participation in the program, as discussed earlier, illustrating this development of personal relevance, which lead to a subject being of interest.

When another participant, Jasmine (pseudonym), was asked what she remembered about the scientist she interviewed, she
also noted remembering the content of the scientist’s research. In a similar fashion, she said, “[The scientist] was trying to help by reducing pollution, and she’s making place cleaner, and she is doing something that is making an impact on cleaning the surface. It’s making things a lot cleaner than now. Stores and everything now stop using plastic and I heard that CBS is stopping using plastic packages, which is good.” This participant mentioned that she particularly remembered this scientist’s contribution to helping the environment and then drew her own connection to something she had seen on CBS, a news station. In making these relevant connections between things she had individually heard and her scientist’s research, it shows that this resonated with her throughout the duration of the program. Both youth participants resonated with the content of the research because it connected to contemporary science and had personal relevance.

In addition to the youth connecting to the scientific content that was explored when visiting these female scientists, they also expressed an interest in pursuing more scientific content in future years of the program. At the end of the interviews, girls were asked what they would like to see next year or what new things they would like to learn. Two girls mentioned they wanted to use different technologies and learn about technology more as a whole. One girl was curious about how robots move, while another asked if the facilitator could explain the chemistry of toothpaste. When the facilitator said she did not know, the participant said she wanted to learn about the periodic table and how elements work. Two girls asked about the environment and how to help it, with one specifically asking about pollution and why corals bleach. Three additional girls wanted new concentrations of science to be highlighted, with one requesting to learn about astronomy and what NASA is doing on Mars and another asking for “animal-based things, gravity, and dumbed-down physics.”

These girls still thirst for more content, but they are all interested in different things. This shows that a variety of scientific content is crucial within a youth-based STEM program as nine girls resonated with various topics, albeit different topics from each other. Everyone will not be interested in the same things, but what is important is that they have an interest and can develop a connection to STEM fields through that interest.

Conclusion

In a society that is largely increasing the number of after-school STEM programs, it is imperative to know what resonates the most with youth participants in these programs to maximize the positive influences. Whether it be the personal connections formed with mentors/role models, the curiosity that comes with learning new scientific content, or the appreciation for the experience of engaging in science in a more direct and hands-on way, program developers can utilize what youth retain from participation in STEM-based programming to better inform future programming and to best support youth cultivation of STEM interests.

In conclusion, all three connections are important in their own ways to the participants. Some girls only had a connection to one of the themes, while others displayed all three, thus emphasizing the importance of creating opportunities for all three different types of connections to be formed. Personal connections inspire young girls and show them that women can succeed in STEM. It is important for these moments and mentor/role model relationships to exist because they prove that it is realistic and possibly more exciting than previously imagined for women to pursue STEM careers. It is also this dialogue that occurs between the scientists and participants during interviews that is critical, as opposed to just reading about successful women, because the girls can ask what is important to them and what they want to know. The opportunity for hands-on experience is also essential for many participants because it is an intimate interaction with science that allows girls to learn valuable skills. Working through experiments introduces them to different concentrations in science and allows them to gain confidence in the material, in a fun and supportive environment. Lastly, both the scientific connection and fostered curiosity for STEM concepts are also important. Some girls are introduced to subjects they would have never considered before, but in this explorative environment, they are encouraged to engage.

Even if these girls do not want to pursue STEM, what is wrong with having aspiring lawyers, artists, fashion designers, and cartoonists who know a bit more about science? Science is about problem-solving, collaboration, critical thinking, and communication. These are skills that will carry over into any profession and life itself. Ultimately, the goal of the program is to engage young girls in STEM with the hope that they would consider pursuing a career in STEM, without being burdened by gender stereotypes that would otherwise discourage them. If, in the end, they still do not consider STEM in the future, it is hopeful they took away something meaningful.

Limitations of the Study

While this study has the potential to have a powerful impact on the development of female youth-based STEM programming, there is still plenty of work that needs to be done to better understand how to support youth within these programs. This study was limited to one cohort of participants, meaning that the results are not repre-
sentative of all youth. The study would benefit from exploring other years in addition to the sister teen program that runs concurrently with the youth STEMmister program. In addition, to best support the diversification of STEM, future research should include further investigation into youth values in STEM programming across disciplines, age groups, and ethnicities of students.

Acknowledgments

I would like to acknowledge the University of California, Santa Barbara, the URCA Department, and the GGSE for facilitating this research. I would also like to thank Dr. Arya and Dr. Hirsch for the opportunity to be a part of this program and for the guidance on this project. Lastly, I would like to thank Alexandria Muller and Devon Christman for the support, encouragement, and valuable insight throughout this process.

References


About the Author

Hailey Clemens is a current third year majoring in Biology and minoring in Applied Psychology. She has always had an admiration for STEM and ultimately wants to go to medical school and pursue a career as a sports medicine orthopedic surgeon.
Using Data Analysis to Examine Electricity Demand and Renewable Energy in Southern Africa

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Abstract
Access to electricity is essential for development and economic growth. This study explores the potential for renewable energy to provide affordable energy and to alleviate energy poverty in the southern African region. Data analysis and visualization can help us understand the trends in, and characteristics of, energy demand and generation and draw insights into energy inequity across southern Africa. Patterns of electricity demand dictate the scale of energy infrastructure investments required to meet that demand reliably. However, electricity demand forecasts, dictated by the country’s paying capacity and international financial support, highlight the continuation of energy inequities across the southern African region well into the future. This electricity demand analysis project is part of a larger project examining cost-effective planning and implementation of renewable energy generation to provide reliable electricity to countries in southern Africa.

Introduction
As the world continues to grow in population and countries continue to become more industrialized, the conversation about electricity accessibility has become part of a broader conversation about equality, health, and environmental impacts. Electricity is still not easily accessible in many different parts of the world. Thirteen percent of the world’s population, about 940 million people, do not have access to electricity (Ritchie, 2019). Many developing countries cannot meet modern standard needs for electricity; in other words, these countries are considered to be energy-poor regions. This paper is about our electricity demand analysis project and is part of a larger study that will explore how renewable energy can provide sustainable energy and alleviate energy poverty in southern Africa regions. In this project, we analyzed energy demand data to find statistical correlations and to determine the electricity generation capacity needed to provide reliable electricity in southern Africa regions. We also examined the relationship between energy access and human development to explore the impacts of energy poverty for countries in southern Africa including Eswatini, Lesotho, Namibia, Malawi, Mozambique, South Africa, Tanzania, Zambia, and Zimbabwe.

Methods
We collected energy demand data from various electricity companies in the southern Africa region, including Eswatini, Lesotho, Namibia, Malawi, Mozambique, South Africa, Tanzania, Zambia, and Zimbabwe. For the purpose of this paper, we will define energy demand as the energy consumption by human activity, that drives the whole energy system by influencing the total amount of energy used (Creds, 2020). The data we collected were unstructured energy demand data in the format of business Excel spreadsheets, which tracked energy usage measured in megawatts (MW) and energy supply measured in megawatt hours (MWh) over the years for each country. We also collected hydropower data from Malawi, which showed the amount of hydropower energy used from various hydroelectric dams in Malawi. The energy demand data were from multiple years (2016-2019). We decided to focus on the year 2018 and use the 2018 data for the electricity planning model in GridPath [GridPath, 2021]. GridPath is an advanced open-source software electricity system modeling platform developed by several researchers, including my advisor Dr. Ranjit Deshmukh. The energy demand data sets are considered unstructured or “raw” because they are not in a format that can be used in a computer algorithm for data analysis and data visualizations. Each country’s data collector used a different method to format their busi-
ness spreadsheets, and as a result, each country’s raw data were processed differently in order to create a uniformed system. More explicitly, the task was to structure and clean each data set using Python so they can be used for further analysis.

The process of cleaning and structuring data for further use is referred to as data wrangling (Titfaca, 2020). For our data wrangling process, we used a computer programming language called Python and used popular libraries in Python, such as Pandas and NumPy, to structure the data. The best structuring method for this project was to create data frames that could be used as input for an algorithm we created in Python. A data frame is defined as a table or as a two-dimensional array-like structure in which each column contains values of one variable, and each row contains one set of values from each column. Mathematically, we can think of data frames as matrices, where the columns are considered the vectors of a matrix, and the rows are considered the linear equations of these vectors. We can also think of data frames as a table, where each row is a separate entry, and the columns are the variables. For example, if we wanted to collect the age and class level of each student at UC Santa Barbara, each student would be listed as an entry (row), and their age and class level would be the variables (columns). It is important to understand how data frames work because they are structured based on the type of algorithm for which they will be used. Algorithms are instructions given to the computer to conduct a particular task, in this case, to conduct statistical analyses. We can think of algorithms as recipes for a particular dish or as a set of directions to a particular location. To optimize the process of data wrangling, we created algorithms, also called functions, for each country’s data set, to create data frames in the same format.

We created eleven algorithms, one for each of the countries a part of our research, that outputs a data frame with the date, hour, and energy load for each hour in a year. We built functions for each country’s 2018 energy demand and for the Malawi hydro demand data. Each country has a different method to organize its data, so as a result, we created a different function for each country to make our data frames. Some of the challenges we faced were dealing with missing data points in the raw data sets or incomplete spreadsheets. To overcome these challenges and make sure our functions were working properly, we filled missing values using the average with a process called mean substitution (Roy, 2020). In every function, we indicate any changes or substitutions made to account for the impact the substitutions may have on our final results. Once the errors were fixed, our functions output the energy demand data frames that consisted of columns for each hour in the year, the date, and the total energy load for each hour (energy load is the energy demand). By structuring the data frames in this way, we are able to calculate a statistical summary, create time-series, data visualizations, and analyze the data to make decisions.

Summary statistics and data visualizations are useful because they provide detailed information about our data without the need to look at complicated tables or data frames. Once the data frames were created for each country, we then decided to create data visualizations and calculate basic statistics to summarize the information we have for each country. The libraries in Python that were most useful to create the data visualizations were Plotly and Pandas (Wijaya, 2020). We created time series data visualizations for each country to show the amount of energy demand in a given hour for the year 2018. We created the peak demand curve data visualization to see the range of energy demand for each country. Knowing the energy peak demand is particularly important to establish the required generation for our renewable energy sources. By having the energy demand for a given year, we can calculate the total energy demand for the year and calculate the energy per capita value. We define energy per capita as the total energy used per person in a given country. To calculate the energy per capita, we added up the total energy demand in a year in kWh and divided it by the total population in the given country. We calculated the energy per capita for all nine countries in southern Africa, and we calculated the energy per capita for the United States (US) and California for comparison. We used the energy per capita values to create a bar plot to clearly show the energy access for countries in the southern Africa region. The US and California energy per capita were calculated to reference how much energy we have access to in the US compared to developing countries in southern Africa. The energy per capita visualization will be used to examine energy poverty across the southern Africa region.

Results
We used the energy demand data frames to create time series to show the amount of energy used for each hour in the year 2018. We can define time series as a series of data points ordered by time. The time-series starts from hour one corresponding to January 01, 2018, at 12 am, to hour 8760 corresponding to December 31, 2018, at 11 pm. If we look at Figure 1 called the Energy Demand Time Series plot for Lesotho in 2018, we see that it ranges from an
energy demand of 5 MW to an energy demand of about 175 MW. In Figure 2 called the Energy Demand Time Series plot for South Africa in 2018, it ranges from an energy demand of 15,000 MW to about 36,000 MW. Notice the lower values are a result of lower energy demand, and there is a large difference between energy demand in Lesotho compared to the energy demand in South Africa. At a glance the time series plots are harder for untrained eyes to interpret, but they serve a great purpose for researchers, because we can see the range and consistency of energy demand over time.

In Figure 3 called the Cumulative Energy Demand Curve, we have the energy demand for 2018 (in hours) for the nine countries located in sub-Saharan Africa. We notice there is a large variety of usage between the nine countries. By looking at the leftmost point in Figure 3, we can see the highest amount of energy used by each country in 2018. It is important to note that this graph is not a time series. In other words, the data is not ordered by time but rather it is ordered by highest energy demand to lowest energy demand. Looking at the rightmost point of Figure 3, we can see the lowest energy demand value for each country, where some countries have approached zero. Energy demand in the amount of zero could mean a country-wide electricity outage, or it could mean there are missing data. The leftmost point in Figure 3 is significant because this value indicates approximately the minimum amount of electricity generation capacity required to meet the electricity demand for each country. This is important because we want the amount of energy generated to be stable for every hour throughout the year. South Africa’s cumulative energy demand curve is shown in Figure 4 because its energy demand is significantly greater than the other countries in the southern Africa region. If we were to represent South Africa in Figure 3 the other countries’ energy demand curve would appear to be close to zero. By separating South Africa in Figure 4, we are able to better represent the energy demand for each country. Most of the countries in our study have similar energy demand results except for South Africa, because South Africa is economically more developed and has a significantly greater energy demand. These data visualizations are useful because they give a clear summary of energy demand for multiple countries. By using data visualizations, we can derive insights from our data without referring to the data frames. These figures are useful to determine how much energy is needed to meet the demand for each country throughout the year.
In Figure 5, called the Energy per Capita in Southern Africa for the year 2020 and 2040, we calculated the results using the data in, “Annual Reports,” from the Southern African Power Pool database. These data were used to calculate the energy per capita for the nine countries in Southern Africa. Also, we used data from the EIA to calculate the energy per capita for the United States and California represented in the same plot. Figure 5 shows the energy per capita value in the year 2020 and 2040 for the nine countries in Southern Africa. We can see a large disparity between South Africa’s per capita electricity consumption and that of other countries. We also see a significant difference in the expected growth for Malawi and Tanzania from the year 2020 to the year 2040.

This electricity demand analysis project is part of a larger project examining the cost-effective planning and implementation of renewable energy generation to provide reliable electricity to southern African countries. Our results for energy demand are essential to the larger project that focuses on the development of an electricity system planning model. We will continue with this research to develop the statistical summary for each time series and to create more informative data visualizations. With the time series we have created, we will develop heat maps to indicate energy demand per month and provide monthly averages for the given year. The remaining figures will be used to develop a statistical report that will be available to the public on the GridPath website. GridPath is advanced software that provides analytical power-system modeling for renewable energy generation development. The southern Africa data we have collected will serve as a model for other researchers to develop renewable energy generation systems across the world. We will also analyze the correlation between energy demand and wind and solar power generation, to determine the need for other generation resources. Our analysis will help us provide reliable electricity supply for sub-Saharan Africa. Our analysis will lead to a better understanding of the costs and benefits of developing renewable energy. This will help us to ensure a cleaner, sustainable, and affordable electricity system for the countries in sub-Saharan Africa.
About the Author

Tiana Curry is a graduating senior completing her degree in mathematics. Currently, she works as a research assistant through the Faculty Assistant Research Program, working with Dr. Ranjit Deshmukh in the environmental studies department at UC Santa Barbara. Tiana is also a transfer student and is a mentor in the Transfer Student Mentorship Program and was a student speaker at the Transfer Student Class 2020 Graduation. In 2019, Tiana participated in a summer internship at the Smithsonian Institution Data Science Lab and was featured in a Smithsonian article about her contributions to the American Women’s History Initiative. After participating in this internship, she was inspired to continue her research in data science. She plans to participate in a summer internship with UC Santa Barbara and further her research experience with three research projects in the fall of 2020. In the fall of 2020, she plans to participate in three research projects related to renewable energy in southern Africa, environmental justice and COVID-19, and laser simulation at UC Santa Barbara. Her goal is to pursue a graduate degree with a focus in data science to become a data scientist.

Works Cited


Creds. (2020). “What is Energy Demand?”. www.creds.ac.uk/what-is-energy-demand/#:~:text=Energy%20demand%20is%20the%20term,use%20technologies%20that%20consume%20energy


Emotions and their Effects on Moral Foundation Endorsements

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Abstract

This research examined the effects of induced emotional states on individuals’ moral values endorsements. Participants were induced to feel joy, hope, fear, or anger at either the individual or group level through an event recall task. Subsequently, their endorsements of six moral foundations were measured. Results did not support the hypothesis that joy, hope, fear, or anger, experienced at the individual or group level, would significantly affect moral foundations endorsements. Endorsements of fairness/cheating did not significantly differ from care/harm, which in turn did not differ from liberty/oppression. These three foundations were rated as significantly more relevant than all others.

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Background
Moral values and making moral judgments are implicated in every aspect of social life, from interpersonal interaction to law and policy. The framers of the United States constitution were heavily influenced by natural law theory, which places great importance on human reason, through which people can understand the right and wrong actions to take and figure out moral truths (Lambright, 2014). This kind of ideology reflects a rationalist approach to morality, which states that reflection and reasoning lead to moral knowledge and judgments (Kohlberg, 1969; Turiel, 1983). Looking at morality in this way largely closes off the possibility that unintentional forces could guide the moral values we endorse and moral judgments we make. Doing so also prevents consideration of the role of indirect, unconscious forces that might influence the making of moral value endorsements. This could lead to uninformed social judgments and thus negative social interactions amongst people. Additionally, this could bring about improper judgments of character within the political sphere.

The social intuitionist model (Haidt, 2001) opposes the rationalist approach to morality and posits that moral positions are reached through intuition and unconscious processes rather than reasoning and reflection. For example, studies have shown that people will claim that incest is wrong, not on the basis of any explicit justification, but rather on the basis of a “gut feeling” for their decision (Haidt, Bjorklund, & Murphy, 2000). This theory, in combination with the notion that emotions can be largely unconscious phenomena (Winkielman & Berridge, 2004), supports the possibility that emotions could have a significant role in moral value endorsements.

Moral foundations theory, or MFT (Graham et al., 2013), is supported by the social intuitionist model (Haidt, 2001) and uses it to explain that the rapid unconscious moral intuitions it proposes are guided by specific concrete moral foundations like care/harm, fairness/cheating, authority/subversion, and sanctity/degradation. The MFT states that there are specific “foundations” of morality and lists five primary moral foundations that guide human morality: care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and sanctity/degradation. Care/harm deals with the idea of not liking other people’s pain, fairness/cheating deals with altruism and concepts like justice, loyalty/betrayal deals with patriotism and sacrificing oneself for their group, authority/subversion deals with leadership and followship, and sanctity/degradation deals with avoiding disgust and wanting to live in a more noble way (Graham et al., 2013). A sixth foundation of liberty/oppression, which deals with people’s reactions to having their liberty restricted, has also been proposed (Iyer, Koleva, Graham, Ditto, & Haidt, 2012). The authors of the MFT endorse the idea that various emotions might be characteristic of some of the foundations. For example, they suggest that disgust is characteristically associated with issues of sanctity/degradation.

Emotions have been shown to influence almost all human psychological processes, ranging from feelings of life satisfaction (Schwarz & Clore, 1983) to even taste perception (Noel & Dando, 2015). More pertinent to the current issue, specific emotions like disgust have been shown to cause participants to amplify the importance of purity-related behaviors in comparison to other moral domains like care/harm (Horberg, Oveis, Keltner, & Cohen, 2009). This highlights the relevance of emotions, as well as the specificity of emotions within the domain of morality.

The authors of the MFI also argue that fear is a characteristic emotion of the authority/subversion foundation and that anger is a characteristic emotion of the fairness/cheating foundation. The role of positively valenced emotions like joy and hope in the moral domain is largely unexplored. However, there is some evidence that could support the notion that joy is related to the care/harm foundation and that hope is related to the liberty/oppression foundation. For example, research has shown that people who are more dispositionally happy report higher motivation to enact kind behaviors (Otake, Shimai, Tanaka-Matsumi, Otsui, & Fredrickson, 2006), which relates to care/harm. Additionally, Golan-Agnon (2010) recognized the role of hope in the process of reconciliation after the abolition of apartheid in South Africa and suggested that increased hope is needed to solve the political tensions between Israel and Palestine. Both of these conflicts are characterized by issues of liberty/oppression.

Emotions are not solely experienced by individuals as individuals; they have been shown to be felt on a group level as well (Mackie, Devos, & Smith, 2000; Smith, 1993). This idea of group-level emotions opens up the possibility that in addition to individual emotions, emotions felt in the context of being a member of a specific group could also be relevant in terms of making moral value endorsements. Group-level emotions have been shown to lead to increased support for ingroup members (Smith & Mackie, 2016), so it is possible that people as group members could endorse the care/harm foundation more than individuals across any specific emotion.

This study explored whether experiencing certain emotions can lead to some moral foundations being more endorsed than others. We measured both positively (hope and joy) and negatively (fear and anger) valenced emotions. We hypothesized that different emotion conditions would lead to different levels of endorsement for the different moral foundations measured. Because of the ex-
The exploratory nature of this study, making well-supported hypotheses for each emotion condition was not feasible. However, based on what the MFT determines to be characteristic emotions of specific foundations, we hypothesized that:

1) Those experiencing anger would endorse the fairness/cheating foundation more than the other foundations.
2) Those experiencing fear would endorse the authority/subversion foundation more than the other foundations.

Furthermore, based on Otake et al. (2006) we hypothesized that:
3) Those induced with joy would endorse the care/harm foundation more than the other foundations.

Additionally, based on Golan-Agnon (2010), we hypothesized that:
4) Those induced with hope would endorse the liberty/oppression foundation more than the other foundations.

Finally, based on Smith and Mackie (2016) we also hypothesized that:
5) Those primed with emotions on a group level would endorse the care/harm foundation more than other foundations across all emotion conditions.

Methods

Participants

363 self-identified United States citizens residing in the U.S. were recruited through the platform Prolific (for $2.38 compensation). Of those, 28 were excluded based on incorrect responses to either of the two attention check questions embedded randomly throughout the dependent variable items in the online survey. An additional 16 participants were also excluded after failing to correctly respond to a manipulation check question, which asked what emotion they were writing about at the beginning of the study. Thus, the final sample size upon which analyses are based is 319 (49.9% women, 48.6% men, 1.9% other; Mage = 30.64; SD = 10.83). Participants reported their racial/ethnic backgrounds as 65.8% White, 15.4% Asian or Asian American, 7.5% Black or African American, 6.9% Hispanic or Latino, 3.1% Multiracial, 0.3% Middle Eastern or North African, and 0.9% identified as a race/ethnicity that was not listed.

Design

The study was a 2 (group level: individual vs. American) x 4 (emotion: joy vs. fear vs. hope vs. anger) x 2 (moral evaluation: judgment vs. relevance) x 6 (moral foundation: care/harm vs. fairness/cheating vs. loyalty/betrayal vs. authority/subversion vs. sanctity/degradation vs. liberty/oppression) mixed model design. The independent variables of group level and emotion were measured between subjects, and the dependent variables of moral foundations were measured as repeated measures.

Procedure

Manipulation of emotions and level of emotion. Participants completed an anonymous online survey in which they were first given a two-minute writing task instructing them to relive and write as much as they could and in as much detail as they could about a time within the past year that they felt a randomly assigned emotion of joy, fear, hope, or anger. This manipulation of emotion was crossed with the manipulation of emotion level. Half the participants were asked to relive an emotion they had experienced as an individual, and the other half were asked to relive an emotion they had experienced as an American.

Moral Foundation endorsements. Following the emotion manipulation, participants completed an adapted version of the 30-item Moral Foundations Questionnaire (MFQ-30; Graham, Haidt, & Nosek, 2009). This questionnaire measured moral endorsements of five moral foundations of care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and sanctity/degradation based on two subscales: Moral Relevance and Moral Judgments. Two attention check questions were randomly embedded in the MFQ-30, with the first in the Moral Relevance subscale and the second in the Moral Judgments subscale.

In the Moral Relevance subscale, each moral foundation was measured with three items on a 6-point Likert scale ranging from Not at all relevant (1) to Extremely relevant (6) to assess the relevance of each foundation to one’s decision about whether something is right or wrong. For example, participants were prompted to indicate the extent to which the following statement was relevant to their consideration of whether something is right or wrong: “Whether or not someone suffered emotionally.” In the Moral Judgments subscale, each moral foundation was measured with three items on a 6-point Likert scale ranging from Strongly disagree (1) to Strongly agree (6) to assess the extent to which each foundation factors into one’s moral judgments. For example, participants were prompted to indicate their level of agreement or disagreement with the following statement, “Compassion for those who are suffering is the most crucial virtue.”

Since the MFQ-30 measures only five moral foundations, this instrument was adapted with the addition of items measuring the sixth moral foundation of liberty/oppression theorized by Iyer et al. (2012). Six items measuring liberty/oppression (α = .722) were
added to the MFQ-30, three in each of the Moral Relevance and Moral Judgments subscales.

Manipulation checks. To assess the effectiveness of the emotion manipulation, participants were asked to state the emotion they were asked to write about. They were then asked to indicate the extent to which they felt this emotion on a 5-point Likert scale ranging from Not at all (1) to Very strongly (5). To assess the effectiveness of the group level manipulation, participants were asked the extent to which they wrote about their emotion as an individual or as an American on a 7-point Likert scale ranging from Individual (1) to American (7).

Results

Manipulation check. To assess the extent to which participants felt the emotion they were instructed to write about, we conducted a 4 (assigned emotion: joy vs. hope vs. anger vs. fear) x 2 (group level: individual vs. American) between-subjects ANOVA on the dependent variable of the level in which participants felt their assigned emotion. ANOVA was the statistical method of choice, as we wanted to see if there were any statistically significant differences between the different emotion conditions. The main effect of emotion on the extent to which participants felt the emotion they were writing about was non-significant, F(3, 315) = .02, p = .879. The extent to which participants felt the emotion they were asked to write about experiencing did not differ significantly between participants who were assigned the emotions of joy (M = 3.22, SD = 1.21), hope (M = 2.99, SD = 1.12), anger (M = 3.07, SD = 1.14), or fear (M = 2.69, SD = 1.09). Considering that the instrument measuring the extent to which participants felt the emotion they were assigned to ranged from Not at all (1) to Very strongly (5), results show that the extent to which participants felt their assigned emotion was roughly at the midpoint of the scale across all emotions. Since participants did not feel joy, hope, anger, or fear at significantly different levels, we concluded that the manipulation was effective, as it was able to make participants feel their assigned emotions to a similar extent, regardless of which emotion they were assigned.

To assess the extent to which participants felt the emotion at the level they were told to write about (as either an individual or an American), we conducted a 4 (assigned emotion: joy vs. hope vs. anger vs. fear) x 2 (group level: individual vs. American) between-subjects ANOVA on the dependent variable of the level in which participants felt their assigned emotion as an individual or as an American. ANOVA was the statistical method of choice, as we wanted to see if there were any statistically significant differences between the different group-level conditions. The main effect of group level on the extent to which participants felt they were writing about the emotion as an individual or as an American was significant, F(1, 315) = 395.02, p < .001, such that those who were asked to write about the assigned emotion as an individual felt the emotion significantly more as an individual (M = 1.43, SD = 1.18) as compared to those who were asked to write about the emotion as an American (M = 4.92, SD = 1.89). This shows that the manipulation was effective, as it was able to make those in the individual condition feel their assigned emotion significantly more as an individual, as compared to those in the American condition, and make those in the American condition feel their assigned emotion significantly more as an American, as compared to those who were in the individual condition.

Moral judgment and moral relevance composites. To assess the degree to which the instruments of moral relevance and moral judgments measured their intended constructs, Cronbach’s alpha values for each moral foundation composite and each instrument were calculated. Results showed that the moral foundation composites in the relevance subscales (see Table 1) had acceptably high Cronbach’s alpha values (all above .671). In contrast, the alpha values for the moral foundation composites in the judgment subscales (see Table 2) were variable and four of the six alphas were unacceptably low. Cronbach’s alpha measures survey item reliability based on internal consistency within the measure, therefore, the low Cronbach’s alpha values in the judgment subscale led us to only use the responses to the moral relevance instrument in our analyses.
Relevance judgments of moral foundations. Using the responses from the moral relevance instrument, a 6 (moral foundation: care/harm vs. fairness/cheating vs. loyalty/betrayal vs. authority/subversion vs. sanctity/degradation vs. liberty/oppression) x 4 (emotion: anger vs. fear vs. joy vs. hope) x 2 (group level: individual vs. American) mixed model ANOVA was conducted on the dependent variable of moral relevance of the six moral foundations.

The mixed model ANOVA showed a main effect of moral foundation, $F(5, 1,555) = 353.77, p < .001$. Participants endorsed the relevance of the six moral foundation composites at significantly different levels. There were no two-way interactions between moral foundation and emotion, $F(15, 1,555) = 1.31, p = .118$, moral foundation and group level, $F(5, 1,555) = .65, p < .663$, or emotions and group level $F(3, 311) = .52, p = .67$. Neither the assigned emotion nor the group level affected participants’ ratings of moral relevance for the moral foundation composites. Statistical significance in this paper is considered $p < .05$.

In order to investigate differences among participants’ ratings of moral relevance of the six moral foundations, we compared means between the ratings of the moral relevance of the care/harm foundation ($M = 4.83, SD = .05$), the fairness/cheating foundation ($M = 4.91, SD = .04$), the loyalty/betrayal foundation ($M = 3.41, SD = .06$), the authority/subversion foundation ($M = 3.42, SD = .05$), the sanctity/degradation foundation ($M = 3.21, SD = .06$), and the liberty/oppression foundation ($M = 4.73, SD = .05$). In the cluster of highly relevant foundations, fairness/cheating did not significantly differ from care/harm, which in turn did not differ from liberty/oppression (fairness/cheating was significantly more relevant than liberty/oppression, $p < .001$). All three of these foundations were rated as significantly more relevant than all other foundations, all $p < .001$. Second, relevance ratings of the loyalty/betrayal and authority/subversion foundations did not significantly differ from each other, but both were rated as significantly more relevant than the sanctity/degradation foundation. See Figures 1-6 for means and differences between relevance endorsements of the six moral foundations.

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>a</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Care/Harm</td>
<td>4.55</td>
<td>.92</td>
<td>.444</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2. Fairness/Cheating</td>
<td>4.43</td>
<td>.81</td>
<td>.399</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3. Loyalty/Betrayal</td>
<td>2.97</td>
<td>1.04</td>
<td>.565</td>
<td>.05</td>
<td>.20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4. Authority/Subversion</td>
<td>3.65</td>
<td>1.17</td>
<td>.675</td>
<td>.07</td>
<td>.20</td>
<td>.65</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5. Sanctity/Degradation</td>
<td>3.03</td>
<td>1.31</td>
<td>.771</td>
<td>.07</td>
<td>.04</td>
<td>.55</td>
<td>.43</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6. Liberty/Oppression</td>
<td>4.49</td>
<td>.86</td>
<td>.572</td>
<td>.33</td>
<td>.23</td>
<td>.19</td>
<td>.25</td>
<td>.29</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: $^* p < .01, \alpha = \text{Cronbach's alpha}$.

Table 2. Means, Standard Deviations, Reliabilities, and Correlations for Moral Judgment Instrument, N = 319
Discussion
Based on prior theories and research, we hypothesized that experiencing certain emotions, at both the individual level and group level, would lead participants to endorse certain moral foundations more than others. Interestingly, none of our main hypotheses
were supported by our results. Being induced with joy, hope, fear, or anger did not lead participants to endorse any of the six moral foundations significantly more or less than the others. Additionally, being induced with joy, hope, fear, or anger at the level of either an individual or an American did not lead participants to endorse any of the six moral foundations significantly more or less than the others.

One significant effect found in the study was that participants endorsed each of the six moral foundations differently from some of the others. This provides support for the Moral Foundations Theory (MFT; Graham et al., 2013), as the theory argues that each of the foundations are separate entities from one another. Results showed that care/harm, fairness/cheating, and liberty/oppression were rated as significantly more relevant than loyalty/betrayal, authority/subversion, and sanctity/degradation. This is consistent with the idea that care/harm, fairness/cheating, and liberty/oppression are all individualizing foundations of morality (Graham et al., 2009, 2011; Iyer et al., 2012), since all participants were filtered for being American citizens, and were therefore a part of an individualistic culture.

Additionally, it was found that those induced to feel an emotion at the level of an individual, felt the emotion significantly more as an individual, as compared to those induced to feel an emotion at the level of an American, who felt the emotion significantly more as an American. This provides support for the intergroup emotions theory (Mackie et al., 2000; Smith, 1993) since it argues that group-based emotions are distinct from individual emotions.

Limitations. We would have liked to use several emotion induction methods, like also inducing emotion by having participants watch videos, in order to ensure the robustness of our manipulation, but due to time and monetary constraints, we were unable to do so. Furthermore, since this study was conducted online, problems like participants potentially lying about prescreen filters or entering multiple study submissions to receive more compensation could have had an effect on sampling error.

Future directions. Being that the link between emotions and morality is largely exploratory at this point, there are many opportunities for future investigation. Further studies could examine the effect of emotions on decisions made in different moral dilemmas and moral scenarios. For example, does being induced with anger vs. joy affect how you make decisions in situations like the trolley problem (Foot, 1967), a moral dilemma in which taking action leads to the saving of five people and the death of one person and not taking action leads to the death of five people and the saving of one person? With the recent global COVID-19 pandemic, further light could also be shed on whether the group-level, globally felt emotions that arose from the pandemic led to different moral foundation endorsements, compared to before or after the pandemic.

**Conclusion**

Moral values, making moral judgments, and experiencing emotions are implicated in all aspects of the human social experience. Every day, people like politicians, policemen, and CEOs make statements and decisions that revolve around morality and are subject to the scrutiny of others in regard to these actions. Since it is a given that emotions are felt throughout our existence, it is important to understand their effects on actions involving our moral values. Recognizing whether or not emotions play a role in endorsing different moral values can provide valuable insight into the standard to which we should hold the actions of not only those within our social circle but also those who are the leaders of our society and enforcers of our law.

**References**


About the Author

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Localizing the PISA Initiative to Tackle Educational Inequity—Case Study on UCSB Students

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Abstract
The purpose of this study is to analyze the effectiveness of the global Programme for International Student Assessment (PISA) in tackling educational inequity, with an emphasis on the academic experiences of UCSB students. This research was done amidst the various controversies among local academic institutions, which included the 2019 California college admissions scandals and 2020 cost of living adjustment (COLA) protests. PISA is primarily a top-down initiative as it mainly champions educational equity through collaborations with government officials. This neglects the key role of community actors, such as governors and principals, and does not account for localized complexities, such as federalism in the United States. To identify bottom-up approaches that would complement PISA, a pilot study on the academic experiences of UCSB students was done. Key findings included 88% of the respondents coming from counties with higher standards of living, and only 3% having considered an overseas university education. The paper thus suggests that the global PISA initiative is inadequate in resolving localized educational inequities and raises two bottom-up programs – college open-day sessions in disadvantaged counties and local forums on state education policies – to improve socio-spatial disparities in educational equity.

Introduction
The common adage, “knowing is half of the battle,” highlights the importance of recognizing and understanding an issue. However, half the battle is not enough. The second half is the implementation of a solution. This research paper focuses on educational inequity and elaborates on how the Organisation for Economic Co-operation and Development (OECD) tackles the widespread issue through their renowned Programme for International Student Assessment (PISA). However, the global initiative has shown itself as only adequate in fighting the first half of the battle and falls short in achieving actual results for the everyday, local student. This shortcoming fuels the debate on whether to implement top-down approaches (forcing behavior change through policy) or bottom-up approaches (influencing policy through behavior) in education policy making. As the debate continues, this study emphasizes that an over-dependence on top-down approaches – evident in PISA – would be to the detriment of educational equity. In order to help identify complementary bottom-up approaches, primary data was gathered from students at the University of California, Santa Barbara (UCSB). The findings revealed trends in socioeconomic profiles and academic choices, which led to the proposal of two local programs that would improve area-specific educational inequities.

BACKGROUND ON PISA AND EDUCATIONAL INEQUITY
The 21st century saw the initiation of PISA by the OECD, and 70 countries and economic zones now take part in the triennial international standardized assessment (Annex A). PISA aims to aid countries in their education policy making processes, whereby, in the recent decade, the OECD has placed particular emphasis on combating educational inequity (OECD, 2018). Educational equity means that personal or socioeconomic circumstances, such as ethnicity, sexual orientation or household income, are not barriers to achieving academic potential (OECD, 2012). PISA plays its part by providing various measures on educational equity, such as equity in cognitive achievement, student well-being, and educational attainment (OECD, 2015).

Educational inequity has been reported to be an increasingly global issue, especially in the context of a growing socioeconomic gap (OECD, 2018). Gallup has identified five main socioeconomic classes, which are – from the lowest to the highest – the lower class, working class, middle class, upper-middle class and upper class (Gallup, 2020). In recent scholarship on socioeconomic inequality, more general terms have been used, which mainly included...
binaries of advantaged and disadvantaged students. There have been various measures used to identify these two camps, such as gender, ethnicity or whether their parents had received higher education. However, the common consensus is that there has been an increasing concentration of disadvantaged students in less prestigious schools and concentration of advantaged students in prestigious institutions. This phenomenon confounds the issue of educational inequity as the socioeconomic profiles of schools are shown to have a substantial role in shaping academic outcomes. If socioeconomic segregation persists, it could possibly mean that disadvantaged students would remain trapped in a cycle of poverty, whilst advantaged students propel up the academic ladder. This worsens the current widening socioeconomic divide.

PISA is thus a viable means of tackling this widespread issue by creating awareness, mainly through the publication of country-specific demographic and academic datasets from their triennial standardized tests. Based on the profiles of students who took the PISA tests, the OECD is able to come up with a representative dataset of the socioeconomic status (SES) of the general student population, which includes income levels, educational status of parents, and access to academic resources. The comparison of academic performance and demographic information is key in judging educational equity (OECD, 2018). The greater the disparity that PISA finds between these two categories, the greater educational inequity is in that country. This is how the OECD is able to reach their target population, who are the disadvantaged students of a given country.

The implementation strategy of PISA, which is rather grey and broad, is based on the idea that knowing and being aware of the issue is half of the battle won. The large country-specific datasets, when shared with a particular government, can be compared with data from another country and thus, their programs or policies that have helped or hurt it. OECD then collaborates with governments and policy makers, who are responsible for the implementation of policies that would reduce the equity gap. As the OECD cannot make direct policy changes, the organization relies on social and political connections, as well as the openness of governments.

**CONTROVERSIES AND DEBATES OF PISA**

It should be noted that even with the existence of its flaws, PISA is an invaluable initiative that efficiently measures country-specific demographic trends and academic standards. The standardized testing system, at present, fulfills its basic job of testing educational equity within countries. However, as governments are the main intermediary and entity responsible for improving academic systems, PISA is shown to take on a rather top-down approach in tackling educational inequity. This brings about various issues, with the main one being the fact that the OECD is limited to a consultative role, which does a disservice to its global efforts in collecting reputable data for needed changes in underperforming academic systems (Mortimore, 2009).

There is debate over whether or not to utilize a top-down or bottom-up approach to education (Gür et al., 2011). Many OECD countries utilize a top-down approach. However, Finland, which is praised highly for its academic performance and levels of socioeconomic equality, is often brought up as a successful example of a bottom-up education system. In a study done by Jenna Lähdemäki (2018), it was found that the success of the Finnish education system was attributed to its distinctive bottom-up culture, whereby new practices and initiatives within classrooms could be effectively scaled up to the level of the institution.

The top-down approach may also be considered lacking when taking into consideration large countries, such as the United States, which has multiple governmental authorities with varying levels of executive power. This brings about a prime example of the controversies in federal versus state involvement, whereby there is uncertainty in how involved the federal government should be in tackling educational inequality as compared to state-level authorities. In the United States, education is viewed as under state jurisdiction and supported by the federal government. This means much opposition to federal involvement in educational matters. In Paul Manna’s book, Collision Course: Federal Education Policy Meets State and Local Realities, he used the No Child Left Behind Act (NCLB) as an example of the issue of mixing federal and state governance in education policies. With NCLB, “conservatives worried about the expansion of federal programs, even as they applauded the oversight. Liberals fretted over whether the program would provide enough aid to allow local schools to meet the tough standards but found comfort in federal support!” (Manna, 2010). The interplay and tension between federal and state governance shows that even though the OECD could recommend changes to education policies, internal political bureaucracies could act as barriers to actual change. Thus, governments, as a key intermediary in the PISA implementation strategy, might not be the most effective or efficient bodies to bring about improvements
to educational systems or environments.

Giving an opportunity for local actors and communities to make a difference to their academic environments would complement the vital and comprehensive top-down approach of PISA. The OECD has so far lacked in their collaborative efforts with local actors, such as governors, teachers and community leaders, who are at the forefront of educational inequity; witnessing and experiencing the area-specific challenges in academic attainment and social mobility.

**RESEARCH DESIGN AND METHODOLOGY**

A case study was designed to help the researchers identify possible local and bottom-up implementation strategies that would complement PISA. This case study can be used as a launching pad for future local initiatives by the OECD.

**Online Surveys**

An online survey was created to consolidate local experiences and data on the levels of educational equity. This was sent to its target audience, which were in-state undergraduate students from UCSB, through various media channels, such as Facebook and WhatsApp.

The survey inquired of the socioeconomic origins and academic choices of UCSB students (Annex B). The SES of the respondent was uncovered through various demographic questions, such as what was their ethnicity, which county they belonged to, as well as their family status. The academic journey of the respondent was revealed through questions asking for their weighted GPA and ACT scores, university choices, and post-college aspirations. Data on the SES and academic choices of the students were consolidated to help the researchers study the levels of educational equity at UCSB.

For example, if there was a sizable number of low-SES students at UCSB who had achieved good academic results during their pre-university years, it would indicate high levels of social mobility and reflect well in terms of educational equity. On the other hand, if there was a sizable number of high-SES students at UCSB who had achieved poor academic results during their pre-university years, it would indicate low levels of educational equity. This can be applied to other personal and social circumstances such as gender, ethnicity and sexual orientation.

The survey also inquired of the educational and career trajectories of the student population and drew linkages to their personal and social circumstances. For example, if high-SES students with low academic results found themselves confident in entering lucrative jobs or high-status schools and low-SES students with high academic results found it likely that they would enter vocational occupations, this would hint of low levels of equity.

**Survey Design**

Data collection was done through online surveys, whereby the non-probability sampling method of convenience sampling was found to be the most efficient means of collecting data. This meant that accessibility and availability were key components in the data collection and respondents only completed the survey if they were willing to. Though convenience sampling has its drawbacks, it is reported to be an adequate means of data collection for pilot studies (Albert et al., 2010), which would be reflective of this exploratory study.

**Administration**

A total of 16 questions (Annex B) were asked and these questions were kept within the recommended 20-word limit (Cloke et al., 2004). The survey was kept short to maximize the number of responses and limit impartial submissions. The survey also had a variety of types of questions, which included yes/no questions, short answer questions, checklist questions, in order to ensure that results encompassed both quantitative and qualitative results. It should also be noted that the results of the survey were used only for this research and anonymity was kept throughout the administration of the survey, whereby their names and emails were not collected.

**Limitations**

Due to the structure of the research course, the survey was only approved for circulation on 21 February 2020 and was closed on 9 March 2020. The research team also encompassed only four individuals, two of which were exchange students who had only been in UCSB for a few months. This limited the social networks available when finding respondents. Furthermore, only UCSB was chosen due to the inability of the researchers to conduct research at other universities. Future research could explore surveying populations at the private universities that were involved in the 2019 California
RESULTS AND KEY FINDINGS

A total of 94 students responded to the online survey, which almost doubled the initial goal of 50 respondents (Table 1). In order to maximize the credibility of the findings, the researchers only highlighted those results with vast disparities in student responses. These significant disparities were later identified to be key findings, as compared to results with smaller statistical differences, such as a 60-40 per cent divide in responses.

In terms of academic merit, there were no notable trends of educational inequity as in general, most of the students achieved good high school GPAs, as well as SAT and ACT scores (Table 2). If anything, some from lower socioeconomic classes achieved lower academic scores, which agreed with modern literature, whereby disadvantaged students are less likely to perform as well as their advantaged peers due to a relative lack of resources.

<table>
<thead>
<tr>
<th>Socioeconomic Class</th>
<th>Lower</th>
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Table 1: Demographic overview of the 94 respondents.

The 94 respondents came from a total of 23 out of the 58 counties in California. As a quarter of the students reported to be from the Los Angeles county, it could be postulated that one was more likely to enter UCSB if they were from the Los Angeles county. When the population sizes of counties were taken into consideration, the researchers found that a notable percentage of respondents were reported to be from smaller counties, such as Santa Clara and Contra Costa. Furthermore, 17 of the 23 counties were noted to be in the top 20 counties for highest quality of living (Figure 1), as created by the academic ranking site Niche (Niche, 2020). These results show that where a student lived mattered as one was more likely to enter UCSB if...
The survey also showed that most students did not consider studying abroad to pursue higher education (Figure 2). With only 5 respondents considering an education abroad, in terms of a growing socioeconomic divide, this result seemed particularly puzzling. Colleges in the United States are known to have one of the most expensive tuition fees globally and cheaper alternatives, even for international students, can be found in renowned universities abroad. English-speaking regions with reputable universities include the likes of Scotland, Canada and Singapore. Especially with the existence of overseas academic scholarships, an international educational experience could be a viable avenue for social mobility.

Modern literature has identified that the average successful response rate for surveys was about 10%, and it could then be postulated that about 900 students were contacted for this survey. This was especially likely because of the use of social media to contact possible respondents. However, the data collected still does not offer a precise or sufficiently detailed idea of all the conditions that affect the academic experiences of UCSB students. It is therefore important to increase the pool of respondents in order to achieve a representative sample size of at least 10% of the undergraduate population, which amounts to about 1,800 students.

However, this pilot study has still highlighted specific results with significant disparities in student responses, such as 88% of students coming from counties with high standards of living and only 5 respondents having considered pursuing higher education abroad. These results are area-specific, or rather, relevant to those from the UCSB community. Whether it is the lack of academic resources in disadvantaged counties or lack of awareness of study abroad opportunities, these local inequities would not come under the radar of the PISA initiative and its top-down policy making approach. As such, the research-
ers have suggested two local programs, in relation to the UCSB community, that could act as a complement to the PISA initiative.

PROPOSALS TO LOCALIZE THE PISA INITIATIVE

College Open-Day Sessions

The researchers propose that PISA should host several college open-day sessions. These open-day sessions should be held in counties with lower standards of living, such as Fresno, Kern and Riverside. The geographical selection is important to not only maximize outreach, but raise the levels of educational equity in California by bringing academic opportunities to the counties where less fortunate students live. Moreover, future local surveys would be able to verify not just the effects of hometown origins, but the effects of other personal and social circumstances that impact academic opportunities and outcomes. For example, if ethnicity and family status are major barriers in educational equity in Los Angeles and San Francisco respectively, the college open-day sessions in Los Angeles should focus on ethnicity and discussions on family status should be held in San Francisco. This helps to meet the actual needs and disadvantages of particular geographies.

The researchers also suggest that PISA establish agreements with foreign universities, whereby these universities could attract potential Californian students at the college open-day sessions. PISA, with its global presence, has the ability to reach out to renowned academic institutions, who might be looking for more avenues for revenue. The large youth demographic in California offers foreign academic bodies a reason to join the college open-day sessions to attract prospective international students. The appearance of representatives from foreign universities at the open-day sessions should also accompany a list of possible scholarship opportunities and counselling services on studying abroad. As more Californian students and parents learn about affordable international opportunities, it would provide another alternative route for social mobility.

Local Forums on Education Policies

PISA should also organize a series of bimonthly forums, whereby policy makers would present relevant updates to local education policies. The key feature of the forums would be the inclusion of local leaders from the various communities, and an open interactive setting to seek answers from those in executive authority.

The four objectives of these local forums would be to (1) establish a common line of action in tackling educational inequity, (2) establish a time frame to implement the new actions, (3) encourage the exchange of good practices between more and less virtuous states, and (4) host international representatives and experts in the field, such as Ministers of Education from foreign countries with high levels of equity in education.

Local forums are a viable means for PISA to promote better results in educational equity, not only for California, but for the United States in general. As of 2017, some considerable steps have been made toward a more egalitarian system, and a substantial number of states have begun to provide funding programs for less wealthy students; for example, the “California Promise Program” that was launched in 2018 (Rose, 2018). Nevertheless, the states proposing these sort of programs are still a minority and existing programs could certainly still be improved. Furthermore, many of such education policy initiatives are exclusively for students living in the same state, where the program was launched, and this means that disadvantaged students from other states might remain at a disadvantage.

Though this research presents only preliminary results and proposals, the researchers argue that this is an assiduous confrontation on the sensitive and widespread issue of educational inequality. Through multi-level government collaborations, based on horizontal dialogue and experience sharing, PISA can further expand its influence with the inclusion of a wider variety of local actors in everyday education. This would be effective in raising levels of educational equity – locality by locality – and create more in-depth and targeted discussions on the current realities of educational inequities.

ANNEX A - COUNTRIES AND ECONOMIC ZONEs IN PISA 2015

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PISA 2015 took place in 79 countries and economic zones (OECD, 2015).
ANNEX B - ONLINE SURVEY QUESTIONS

1. What year are you currently in?
2. What gender do you identify as?
3. What is your race/ethnicity?
4. What is your age?
5. Where would you consider to be your hometown in California?
6. What best describes the socioeconomic status of your family?
   ○ (a) Lower class; (b) Working class; (c) Middle class; (d) Upper-middle class; (e) Upper class
7. What was your high school GPA (weighted)?
8. What were your SAT or ACT results?
9. Was UCSB your first choice?
10. Did you apply to other colleges?
11. If you did apply to other colleges, what type/s did you apply to? (Check all that apply)
   ○ (a) Ivy League or private university; (b) Public (state) university; (c) Community college; (d) Foreign university
12. Which of the following personal and social circumstances has or have affected your academic potential and outcomes? (Check all that apply)
   ○ (a) Gender; (b) Race/Ethnicity; (c) Socioeconomic status; (d) Hometown or local neighborhood; (e) Sexual orientation; (f) Political beliefs; (g) Other
13. Have you ever considered not pursuing college education and going straight into the workforce?
14. Do you wish to pursue further education after your undergraduate studies?
15. What job industries do you think you will go into?
16. How do personal or social circumstances affect your career decisions?

About the Authors
Emma Chun is a Global Studies major at the University of California, Santa Barbara. As a 4th year student, she is set to graduate in June 2020. She studied abroad in Seoul, South Korea during her junior year and aspires to work internationally in the future. Emma was born and raised in the Bay Area and she loves traveling, reading, and trying out new foods.

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Kira Lazzarini is a 2nd year Global Studies major and Anthropology minor at UCSB and plans to graduate in the spring of 2021. Kira is from Los Angeles, loves to travel, is interested in politics, and enjoys volunteering. She spent the last summer living and volunteering in Thailand and aspires to continue to travel in conjunction with her education and passion for international learning.
“This Berlin Wall that Runs through Me”: Making Sense of the Postcolonial African Alienation

Ebelechukwu Veronica Eseka
History, University of California, Santa Barbara

Abstract
This Berlin Wall that Runs through Me sheds light into the legacies of the European colonization of Africa, chartered at Berlin in 1884-1885. The violent, crude invasion alienated Africans and criminalized intra-African mobilities by re-engineering Africans into rightless “natives” and “alien natives,” controlled within the new colonies in violation of their social, political and economic realities. Independence reified these “tribalizing” Berlin walls into national borders. The Ghana-Nigeria transborder expulsions (1960s-80s) illustrate the legacies of this alienation. The Berlin walls continued the immobilization, alienation and criminalization of invented intra-African difference, rationalizing Afrophobic violence that still afflicts Africans today.

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This paper argues that the Berlin Conference of 1884-1885 wrought havoc on African lives by creating artificial borders and hatreds, which the African independent states reified rather than resolved. By recycling these unreformed logics of power into notions of national sovereignty, African leaders reinforced the balkanization of the people and buttressed the criminalizing regimes of the invented borders. Balkanization is an act of dividing a region into smaller mutually hostile groups. This is what Europeans did when they divided and cut up the African continent into numerous colonies. The invented intra-African differences have manifested in what sociologists have called “tribalism” but also, more importantly, intra-regional conflicts and secessionism. This paper utilizes the retaliatory expulsions between Ghana and Nigeria in 1969 and 1983, which caused so much suffering to citizens of both countries, to illustrate the continued deleterious impact of this Berlin Afrophobia. I draw upon the works of such scholars as Mahmood Mamdani, Adu Boahen, Aimé Césaire, Patrice Malidoma Somé and Toyin Falola to analyze the sociological and psychological impacts of this mayhem.

This mayhem started with German Chancellor Otto von Bismarck inviting his fellow European rulers to attend a conference on Africa in his capital, Berlin, in 1884. This was the infamous Berlin Conference, by which the European powers formalized their vying “spheres of influence” in Africa, producing the odd patchwork of lines and shapes that we call countries today. The United States sent a representative, and Ethiopia was the only African country that had a representative in an observatory capacity. There, Bismarck set out and defined the rules of what Africans have since experienced as a radical, violent impact on their lives. Berlin formalized their conquest, occupation and arbitrary balkanization, seizures of lands and other resources without paying any heed to what the Africans felt or thought. All the participating European countries, principally Germany, Britain, France, Belgium, Portugal, Spain, and Italy, signed the Berlin Act on February 26, 1885.

In the main clauses of the Act, the European powers pledged to observe a few crucial rules. Firstly, they would establish free trade to avoid charging each other any taxes. For example, the Berlin Act declared: “The navigation of the Congo shall not be exposed to any landing dues, to any station or depot tax, or for compulsory entry into the port.” This precept illustrates the Europeans’ key economic objective, which excluded Africans who owned this waterway. Secondly, the Act declared that the Europeans work to uphold the abolition of the slave trade in the newly acquired territories. It is important to note here that, as Patrick Brantlinger writes, “Abolitionism contained the seeds of the empire... Britain found in abolition a way to work against the interests of its rivals who were still heavily involved in colonial slavery and plantation economy.” The Berlin Conference was a cornerstone to drive Europe’s Industrial Revolution, with Africans now having to work in neo-slave conditions producing raw materials for export on the continent itself. The Europeans perpetuated this slavery by another name, deploying the myth that they were coming to “civilize” Africans by bringing them Christianity, commerce, and education. As Brantlinger observed, Victorian era pioneer missionaries and “explorers” such as David Livingstone, tended to see Africa as a center of evil, a part of the world possessed by demonic “darkness” or barbarism, represented above all by slavery, and cannibalism, which it was their duty to exorcise. Of course, this was mere justification for colonial conquest and exploitation. The missionaries were key agents for perpetrating African cultural disarmament and softening occupation. The British arch-imperialist in Southern Africa, Cecil John Rhodes, was very clear about this agenda. In his book, African Music, Power and Being in Colonial Zimbabwe, Mhoze Chikwewo argues how Rhodes deployed the missionaries to Zimbabwe to “epistemologically revolutionize and spiritually disarm Africans for empire.” Europeans therefore used Christianity as a mechanism to disarm Africans of their strongest weaponry, their African consciousness in their effort to re-engineer them into subjects of empire.

Colonists aimed to destroy African consciousness. Sovereign African cultures were a threat to colonial administration. To portray themselves as “civilizers” and “saviors,” European colonizers had to forcefully make Africans believe they were worthless and inferior, paving the way for submission and dependency. Language played a prominent role in defining Africans as infrahuman—“natives” and “kaffirs.” As British historian Arnold Toynbee explained in 1934, “When we Westerners call people ‘natives’ we implicitly take
the cultural color out of our perceptions of them. We see them as trees walking, or as wild animals infesting the country. By equating Africans to animals and trees, European colonists are consigning them to an evolutionary primitive or savage nature, “thingifying” them, in Aimé Césaire’s language. The British administrator in Nigeria, Frederick Lugard, reinforced this psychological degradation of Africans in the Dual Mandate, a virtual blueprint for colonization: “His mind is far nearer to the animal world than that of the European or Asiatic, and exhibits something of the animal’s placidity and want of desire to rise beyond the state he has reached.” Here, Lugard sets up a dependency complex by suggesting that Africans are awaiting a savior to help them with their “desire to rise beyond.” Violated through brutal “native” policies governing inter alia, education, labor, and economics, some Africans would internalize these inferiority complexes that manifested in transgenerational psychological self-hate and other desires to approximate whiteness.

Missionary schools demonized African spirituality and other customs such as marriages, medical practices, healing, initiation, and mortuary rituals. These customs were integral to African identities. This epistemicide had many layers, one of which was the kidnapping of African children from their homes at an early stage and forcibly enrolling them into missionary schools. Recommending modes of schooling, the Southern Rhodesia Native Committee of Inquiry of 1910-11 suggested that “It is best to get them as young as possible in order to mould their characters from start.” The committee even suggested doing away with the demand that Africans pay for the schooling because “fees... put more difficulties in the act of the African who does not wish or can not pay for his education.” In his book Citizen and Subject, Mahmood Mamdani argues that “direct and indirect rule are better understood as variants of despotism: the former centralized, the latter decentralized.” He explains that for direct rule, a central colonial authority is established, and the local African people are only included at the lowest ranks of government. However, for indirect rule, Africans were given supervised positions of power (kingships and chieftaincies) to serve as intermediaries between the colonial government and the African population. While the direct system was mainly adopted by French colonizers, indirect form of rule was prominently used by the British. Lugard documented the indirect system in the Dual Mandate, outlining the process of choosing the said kings and chiefs. In societies with existing hierar-

infinitely more dangerous: literacy,... he had returned as a white man.” At the missionary school, the French missionaries demonized his Dagara culture, symbolized by his name, Malidoma, which they banned and replaced with Patrice. They beat his mother tongue out of him, forcing him to learn French, among many other alien cultural habits. After this extent of brainwashing, many Africans could not retain their African identities. In the words of Orlando Patterson, they had died socially and culturally, even as their bodies survived. After his daring escape from the seminary and return to his village, Somé had to undergo a month-long initiation to counteract the cultural violence and alienation.

In addition to the psychological assault on African identities, cultures and bodies, the Berlin system manufactured what Nigerian philosopher Chinweizu aptly calls Lugardist states, after key colonial administrator Frederick Lugard. This was the philosophy that gave Africa Nigeria and the other artificial colonies whose alienating borders ran through communities and cultures, causing displacement and socio-economic and political dysfunctionality. For example, two Berlin borders split and scattered the Ewe people who were one community into Ghana, Togo and Benin. In African Perspectives on European Colonialism, Ghanaian historian Adu Boahen gives examples of other African states that were similarly splintered, such as “the Bakongo... divided by the boundaries of the Congo, Zaire, Angola, and Gabon... the Akans [who] are found in the Ivory Coast and Ghana. The Somali [who are] shared among Ethiopia, Kenya, and Somalia.” Despite linguistic and cultural similarities, the arbitrary destruction of societies through this European balkanization placed these African communities under different European colonial administrations which led to the emergence of new, fictional and frictional cultural and national identities.

After the Berlin Conference, European colonizers adopted multiple forms of governance, the two primary forms being what Mahmood Mamdani calls “decentralized despotisms.” In his book Citizen and Subject, Mamdani argues that “direct and indirect rule are better understood as variants of despotism: the former centralized, the latter decentralized.” He explains that for direct rule, a central colonial authority is established, and the local African people are only included at the lowest ranks of government. However, for indirect rule, Africans were given supervised positions of power (kingships and chieftaincies) to serve as intermediaries between the colonial government and the African population. While the direct system was mainly adopted by French colonizers, indirect form of rule was prominently used by the British. Lugard documented the indirect system in the Dual Mandate, outlining the process of choosing the said kings and chiefs. In societies with existing hierar-

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chical systems, local leaders were appointed to be chiefs. However, chiefs were also imposed in communities where none existed. Lugard laid this out:

The first step is to hasten the transition from the patriarchal to the tribal stage and induce those who acknowledge no other authority than the head of the family to recognise a common chief. Where this stage has already been reached, the object is to group together small tribes, or sections of a tribe, so as to form a single administrative unit, whose chiefs may be constituted a “Native Authority” with defined powers.

This dysfunctional strategy of governance dismantled pre-existent systems and introduced different levels of power and authority while inventing new “tribes.” Among others, Mamdani points at the “invention” of the Ndebele ethnic identity in colonial Zimbabwe as a “tribe” that was created to implement indirect rule. This worked to destroy a once powerful Ndebele state into the European offense of the state of a “tribe.” As a result, African societies were fragmented into politically driven minorities who were governed by “customary law.” Customary law consisted of rules that colonists created based on their understanding of African cultural traditions. When British administrators officiated customary law, tensions and conflicts were bound to occur. Multiple ethnic groups were forced to organize into what colonizers called “tribes.” Therefore, Africans who were not in the same states in the pre-colonial era were now forced to adhere to whatever custom was chosen to create customary laws. Mamdani explains: “Freedom for one could only be at the expense of another… whose custom was considered law: the patrilineal rulers or the matrilineal subjects.” These divisive techniques then created Africans who were forced or brainwashed to internalize the colonial mentality of superiority and began to believe they were culturally superior to the other cultures that were not privileged in the codification of customary laws, such as the southwestern Kalanga who were subordinated to the Ndebele.

As such, a petite bourgeoisie was created leading to elitism that laid the foundation for post-independence politics that would be pervaded with intra-elite power struggles and tyrannies of minority but privileged groups. Therefore, colonists purposefully created these inequalities to lay the foundation for transgenerational tensions among African communities, which then degenerated into what is now often called “tribalism.” Tribalism has manifested itself in many ways. It has laid the foundation for other separationist ideologies such as regionalism and secessionism, which have emerged into barriers against African postcolonial transformation. Though tribalism was a negative consequence of colonial governance mechanisms, Mamdani argues that it could also be emancipatory as a resistance strategy. Some “successful” secessionist conflicts that can be argued to be emancipatory include Eritrea’s secession from Ethiopia (1962-1993), and South Sudan’s secession from Sudan (1963-2003). In 1967, the Igbos took up arms to forcibly break away from Lugardist Nigeria, arguing that the federal government marginalized them as a particular group. This resulted in the destructive and genocidal Biafra War. While some of these secessions gave victory to some, they also inflicted transgenerational traumas that Nigerians are yet to heal from today. In his novel Sazaby, Ken Saro Wiwa, a Nigerian author and environmental activist, demonstrates the levels of trauma and uncertainty that the Biafran war wrought to Nigerians.

By the late 1950s, African countries began to attain independence. African independence was diluted with shallow anti-colonial methods that did not successfully decolonize the institutions, and structures that were set in place by colonists. Instead of creating new systems, postcolonial Africa saw a pattern of imitation and sustenance of social, economic, and political systems that were used by the colonial administration. Imitation of Western culture became a sign of colonial mentality that scholars like Frantz Fanon, and Albert Memmi have pointed out as characteristics of the aspects of violence brought on by the colonizer. The Berlin borders that were created by European colonists in 1884-1885 are examples of colonial structures that were maintained post-independence. Many Africans, especially Pan-Africanists, who believed in the power of the political solidarity of people of African descent, called for the rejection or adjustment of these colonial boundaries because they were living through the consequences. Despite the Pan-Africanist proposal for a borderless Africa that Ghana’s first president Kwame Nkrumah proposed, African leaders still reified the regime of Berlin borders without resolving its known consequences on their people. In his book, Nationalism and African Intellects, Toyin Falola observed that “African nationalists accepted the pre-existing colonial boundaries as they inherited power and established control in their countries.” Here, we see the divisive, elitist power struggles sown by the Lugards of the colonial world. Now, Article 4 (B) of the African Union’s Constitutive Act calls for the effective management of these arbitrary colonial borders that have now become national frontiers. This rule first originated in the Organization of African Unity (OAU) before it became the African Union (AU). Unfortunately, African leaders had to choose between African solidarity and co-existence as separate entities, the OAU which was then one of the most important symbols of Pan-Africanism, defended co-existence.
Nationalism as a foundation for anticolonialism was successful in attaining independence, however, it failed in effective nation-building in Africa. Post-independence nationalism led many African leaders to prioritize national sovereignty; a level of power and authority they were deprived of during the colonial period, over African identity, and solidarity. The African pre-colonial identity of multiculturism was replaced with colonial homogeneous/monotheistic national identities. As a result, Lugardist names such as “Nigeria” and “Kenya” that were constructed with no cultural significance, were accepted as the official African national identities. In addition to these continued identity crises, state formation led to stricter immigration laws and policies that portrayed immigrants as threats to the newly acquired sovereignty. The demarcations European colonists drew on the African map during the Berlin Conference of 1884-1885 became a reification of territorial sovereignty, a sense of belonging and legality of African alienated existence in space.

African migrants who threatened these adoptive national sovereignties were then criminalized and could be deported from “other” countries. Migration has always been an essential aspect of life in Africa. African people migrate to new vicinities across the continent due to many social, economic, and political push-pull factors. People could move freely across the continent until European colonists created the Berlin borders to stifle their mobilities across space. For example, historically, the nomads of Somali regularly made their livelihoods across space from what is now Kenya, Ethiopia, Djibouti, and Somalia. Most of these sovereign African mobilities were untouched. Aderanti Adepoju, one of the leading African migration specialists reports that “The free movement of persons across frontiers in Africa has, historically, been facilitated by the cultural affinity of communities.” So in fact, Africans were able to move freely across societies due to cultural similarities such as linguistic affinity. However, after post-colonial independence, these movements are now facilitated by rigid policed borders that continue to criminalize African mobilities to maintain the adoptive national sovereignties. Thus, colonial derogatory terms such as “alien,” “foreign,” and “illegal” were adapted to African languages inventing words like “Amanfrafo” (Twi for foreigners) and “Makwerekwere” that Black South Africans deploy to demonize and alienate other Black Africans. It is important to identify that the term “alien” is part of the colonial discourse that Europeans used to differentiate between indigeneous people of different colonies. Colonial administrators such as Lugard, used these words when re-engineering Africans into “natives,” and “alien natives.” This marked the beginning of what most identify as Xenophobia against immigrants, but which I call Afrophobia in this paper.

Xenophobia refers to resentment or prejudice towards those who are outcast because they are non-nationals. Afrophobia then means African resentment against other Africans with different nationalities. It is necessary to point out this difference because African immigrants are more targeted as victims of immigration prejudice, in comparison to other non-African immigrants in Africa. The problem here is that the colonized minds of African leaders are quick to criminalize African non-nationals as aliens but open their borders to non-Black people. African leaders perpetuated Afrophobic sentiments especially in electioneering campaigns. Adepoju notes examples of expulsions that have occurred across the continent. These include but are not limited to the Senegalese expulsion of Guineans in 1967; Ivory Coast’s expulsion of about 16,000 Berinois in 1964; Sierra-Leone, Guinea and Ivory Coast, expelled Ghanaian Fishermen in 1968. As these examples illustrate, this is indeed a continental problem and not limited to Ghanaian-Nigerian bilateral relations. The following section focuses on the Ghana-Nigeria case study.

The history of the Afrophobic tensions in Ghana can be traced to Kofi Abrefa Busia’s expulsion of Nigerian migrants from Ghana in 1969. On November 19, 1969, a month after he was elected to office, Prime Minister Busia enforced the Aliens Compliance Order that demanded that all undocumented immigrants had to leave the country by December 2, 1969. At the time, approximately 600,000 Ghanaian citizens were reported to be unemployed. As such, the Aliens Compliance Order was a response to the nation’s economic insecurity. Many West Africans were also deported, but the majority were Nigerians. According to an interview conducted by the Nana Project, “Busia was not about unity, I guess he was a UP leader against Nkrumah… he was about separation.” These were the words of Nana Aba Naaman, a Ghanaian citizen who was in secondary school when the Ghanaian government carried out these deportations. Unfortunately, these Afrophobic deportations from Ghana happened three years after Kwame Nkrumah, an influential advocate for a borderless Africa, was deposed in 1966. Less than fifteen years later, Nigeria retaliated. In January 1983, President Shehu Shagari used the same justifications to sign an executive order for the deportation of all undocumented immigrants. Nigeria’s oil boom economy plummeted that year, which was coincidentally an election year. Thus, when Shagari’s government had to account for the corruption and mismanagement of oil revenue, immigrants became the perfect group to blame.
Suddenly, the Nigerian authorities blamed Africans who had supported the country working as farmers, traders, teachers, domestics, and in other well-respected professions for all kinds of alleged criminal and deviant activities that they used to justify the nation’s new economic insecurity. The Nigerian government legitimized Afrophobic attacks when it encouraged Nigerian civilians to report or expose any Ghanaians in their communities, triggering the infamous “Ghana Must Go.” A BBC interview with a Ghanaian immigrant, Charles Otoo recounted that “the minister handed over power to every civilian... that every civilian can do anything to any alien in the country once the deadline expired.” As a result, many undocumented immigrants lived in fear because even their neighbors could be their worst enemy, so they rushed out of the country in fear for their lives. Therefore, it can be argued that African governments weaponized Afrophobia as a political tactic. Thus, armed by their leaders’ rhetoric and policies, civilians wielded this divisive political mechanism to perpetuate violence against other Africans, reinforcing Lugardist indirect rule in the process.

The journeys “back home” for the expelled Africans posed a daunting question: where is home? Where is home for people whose entire existence have been in the same country that is ostracizing them as aliens? When Ghanaians screamed slogans such as “Mubeko” (“You are going”) to other Africans, where were they to go? The traumas this expulsion wrought became imprinted in the infamous red and blue, cheap but tough and voluminous nylon bag, “Ghana Must Go.” Rushed out of their homes, Ghanaians quickly stuffed their earthly belongings into these cargo bags and hit the perilous road. This bag now symbolizes tumultuous displacement and migration of the wretched of the earth around the world. The journey back to Ghana was brutal because Togo and Benin closed their borders in fear that their countries would suffer economically from the influx of millions of immigrants. Many were displaced and died of hunger or injuries attained during the journey, while others drowned when they opted to return by sea.

Both governments stressed that these immigrants did not have the proper documentation that allowed them to reside in the country legally. This western idea of proper documentation originated from the colonial period when passes were required in countries like Apartheid South Africa, Kenya and Rhodesia before Africans could leave their “native reserve” to go anywhere at all, including entering settler lands. At independence, many African countries did not have national identification systems beyond what they inherited from their colonizers. For example, the Nigerian government launched its first registration process to obtain a national identity card only in 2003.

Because of the absence of a fool proof national registration system, when the raids started in 1983, some “legal” Nigerians and Ghanaians also ran the risk of deportation. This was in part because the police and military were carrying out the raids based on cultural affinity. To protect themselves, many immigrants had to think of creative ways to provide alternative identifiers to evade deportation. For instance, Stephen Atta Owusu gave an account of an Asante immigrant in Nigeria who was advised by her Nigerian husband to get herself “tribal” marks so that she would look more like a Yoruba woman; she already spoke the Yoruba language. As such, symbols on the skin became identity markers that some inventive would-be targets of the deportation raids used as a text in place of official documentary paperwork.

To conclude, the Berlin Conference of 1884-1885 violently scattered African communities amongst power hungry imperialist and colonial governments. To effectively govern their African colonies, the Europeans demonized African cultures through missionization and other forms of epistemicide that invented and reinforced intra-African difference. This differentiating criminalized and stymied African mobilities and belonging, creating Afrophobic hatreds. While African nationalist resistance and revolutionary wars earned them independence, many African states still suffer from the legacies of colonialism, including criminalizing intra-African immigration laws. Unfortunately, Africa, the continent that was once host to these extractive systems, has become dependent on and beholden to the divisive and parasitic systems. Even as the continent established the Organization of African Unity (OAU--now the African Union, AU) that helped rid it of continued direct European occupation, the continent has yet to effectively knock down the Berlin walls, reverse the brutal, Lugardist balkanization, and attain effective unity and freedom. The cultural baggage of intra-African cultural alienation still breaks out in the frequent Afrophobic attacks across the continent, more recently in South Africa. Africans are thus still gatekeeping the many walls that they did not build, in Hugh Masekela’s words.
Bibliography


Lugard, Frederick. The Dual Mandate in British Tropical Africa. William Blackwood and Sons, 1922.


Orlando Patterson, Slavery and Social Death [Harvard University Press, 1985].


The Native Committee of Inquiry, Southern Rhodesia, 1910 - 11.


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Ebelechukwu is a third year Sociology major with minors in History and Applied Psychology. She is originally from Ghana and Nigeria, but immigrated to the United States in 2014. Ebelechukwu plans on adding a Professional Writing Minor during her senior year. After UCSB, she plans to pursue a Juris Doctor degree.
The Gender Diagnosis Gap: The Role of Implicit Bias on the Misdiagnosis of Young Women’s Health Concerns

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Abstract
The objective of this study is to explore the relationship between implicit gender bias in medical professionals and misdiagnosis in young female-identified patients. The study examines the ways in which the age and gender of the patient can impact the accuracy and timeliness of the diagnoses young women receive. Furthermore, it analyzes how experiences with misdiagnosis alter patients’ perceptions of doctors. The findings of this study are based upon the survey responses of 21 young women, ages 19-25 years old.

Introduction
Women seeking medical care are often told that their concerns are misguided. Heart disease, gynecological cancer, and other medical conditions are dismissed as mental health problems—such as anxiety and stress disorders—far too often (Chiaramonte and Friend 2006:256; Markovic, Manderson, and Quinn 2004:388). Perceptions of women as emotional and fragile may cloud doctors’ judgments as they make their evaluations, leaving women without the medical attention they may desperately need. The objective of this study is to examine the relationship between implicit gender biases within doctors and the misdiagnosis of young women. In addition, it aims to gain insight into the ways in which misdiagnosis alters the degree of trust women have in their doctors. Through an analysis of women’s perceptions and experiences of misdiagnosis, I explore how doctors’ implicit gender bias impacts the accuracy and timeliness of the diagnoses women receive.

This study joins an ongoing conversation within the field of Feminist Studies on gender inequality within health care on a phenomenon referred to as the gender health gap (Basu 2007). Previous research on the topic of misdiagnosis and gender has yet to fully examine the intersection of gender and age across the lifespan, focusing only on how the intersection of ageism and sexism impact elderly women (Henderson 1997). The degree to which young women experience this phenomenon has been understudied and is unknown as a result. This study attempts to answer the following questions: What is the relationship between implicit gender bias in doctors and the misdiagnosis of young women’s medical issues? How do experiences with misdiagnosis continue to shape women’s perceptions of medical professionals? In this study, misdiagnosis is defined as the incorrect diagnosis of an illness. Delayed diagnosis—defined as a case in which an illness was not diagnosed accurately within a reasonable amount of time—is included as well. I measured the impact of doctors’ implicit biases on diagnosis through perceptions of doctors’ comments (i.e., dismissal of concerns, condescending remarks, etc.) and assessed the degree to which my participants feel that their trust in doctors has been altered. Using my findings from a survey of 21 women, I will first bring these experiences to light and later discuss their significance.

Literature Review
Implicit Gender Bias
Gender roles, expectations, and stereotypes are taught from a young age and continue to impact one’s thoughts and behaviors over their lifespan (Drake, Primeaux, and Thomas 2018:1). Gender Studies scholars Samantha Bates et al. (2019:296) contend
that gendered assumptions and processes mold the unconscious mind in ways that produce implicit gender biases. Implicit gender bias is defined as “unintentional and automatic mental associations based on gender deriving from norms, traditions, values, culture, policies, institutions, interactions, images, and/or experiences” (Bates et al. 2019:298).

No one is fully immune to implicit gender bias, as even those who are consciously opposed to misogyny can unknowingly perpetuate gender inequality (Bates et al. 2019:298). According to medical scholars Elizabeth Chapman et al. (2013), doctors often unknowingly reinforce disparities within healthcare as a result of implicit bias. Subsequently, they argue that the training doctors receive may even increase this bias, as it stresses group level information such as population risk factors that serve to reinforce stereotypes (Chapman et al. 2013:2). Furthermore, Chapman et al. (2013:2) contend that a physician’s belief in their own objectivity, as a result of the scientific nature of their occupation, may actually increase bias in their decision making.

The Fallacy of Emotionality

In 2018, a team of psychologists conducted a study on implicit gender stereotypes using a test called the Implicit Relational Assessment, which revealed stereotype-consistent attitudes within their participants (Drake, Primeaux, and Thomas 2018:1). They reported that both male and female participants expressed perceptions of men as logical and women as emotional (Drake, Primeaux, and Thomas 2018:16). The stereotype of women as emotional has harmful implications, particularly in terms of women’s medical care. Doctors of all genders are not immune from the biases that such labels create. As a result, implicit gender bias negatively impacts the accuracy of women’s diagnoses (Henderson 1997:112).

According to public health scholar Jessica W. Henderson, “…physicians are more likely to perceive women’s maladies than men’s as the result of emotionality” (1997:112). For example, a study on medical students’ and residents’ gender biases in the diagnosis of coronary heart disease found that women’s symptoms were misinterpreted more often when they expressed feelings of stress as compared to that of men. Thus, a greater emphasis is placed upon women’s psychological symptoms (Chiaramonte and Friend 2006:256). Evidently, greater weight is placed upon women’s stress and psychological symptoms, contributing greatly to their misdiagnoses.

Previous studies have revealed that advanced age can increase the likelihood of misdiagnosis for women. In a case study conducted by Henderson (1997:108), an elderly female patient reported that her doctor was dismissive of her leukemia symptoms and instead “attributed them to stress and told her not to worry so much since she ‘wasn’t 30 years old anymore.’” The psychologization of her symptoms suggests implicit gender bias. Furthermore, the dismissive and patronizing nature of his remarks pertaining to her age contain ageist sentiments. In these ways, the doctor’s implicit biases towards elderly women seem to have shaped the diagnostic process and drastically impacted the accuracy of the given diagnosis. Elderly women face an additional risk of misdiagnosis due to dominant assumptions regarding their advanced age. Thus, the patient’s age plays a critical role in the diagnostic processes.

It is documented that perceptions of elderly women as particularly vulnerable to mental disorders shape their diagnoses (Henderson 1997:110). However, little is known about the role age plays in the misdiagnosis of young women. Psychology scholars Thomas Nicolaï Iversen et al. (2002:4) have found that there are significant similarities in how ageism is directed towards young and old people. They argue that this is due to the inferior positions both groups occupy within larger societal power structures (Iversen et al. 2002:4). As a population, young people are rarely taken seriously by older and more experienced authority figures. This places young women in a particularly dangerous position, as they are not only labeled as overly emotional and irrational because they are female, but also they are perceived as being naïve and ignorant because of their age. Therefore, this study attempts to discover whether the intersection of age and gender impacts the likelihood of misdiagnosis for young women.

Medical Racism

Racism, as well as and overlapping with misogyny, has long plagued the American health care system and continues to do so through the present. In an article in Ethnicity and Disease, G. King (1996) explains the ways in which racism is perpetuated within medicine: Institutional or systemic patterns of racism are legitimized and promulgated through accepted standards, criteria, and organizational processes within the medical health complex that have the effect of discriminating against the minority group.
The care that women of color receive is shaped by implicit racial biases within their doctors. Public health scholars Lisa A. Cooper et al. (2012:980) argue that doctors demonstrate an implicit preference for white patients. It is important to note, however, that the level of implicit bias a physician demonstrates does vary according to their own race and gender (Chapman et al. 2013:2). Most often, physicians who are people of color exhibit pro-white bias than their White counterparts (Chapman et al. 2013:2). Female physicians also tend to display less racial bias than male doctors (Chapman et al. 2013:2). Racial bias can shape patient’s preferences for doctors. According to medical scholars Kimberly L. Reynolds et al. (2015), it is not uncommon for white patients to request white doctors, however the American Medical Association still does not have policies or procedures in place to instruct doctors on how to handle these instances of racism when they arise.

Women of color are particularly vulnerable to the effects of prejudice within health care, as they are subject to both racial and gender prejudice. Legal scholar and civil rights advocate Kimberlé Crenshaw (1991) coined the term “intersectionality” to describe the ways in which these seemingly separate social systems interlock and create varying degrees of both privilege and oppression. Crenshaw (1991) argues that “because of their intersectional identity as both women and of color within discourses that are shaped its Code of Medical Ethics: “The relationship between a patient and a physician is based on trust, which gives rise to physicians’ ethical responsibility to place patients’ welfare above the physician’s own self-interest” (American Medical Association “Code of Medical Ethics”). Thus, the relationship between doctors and patients should ideally exist upon a foundation of mutual trust and respect.

However, this can easily be broken when patients feel that their doctors have not taken their concerns seriously. Public health scholars Markovic et al. (2004:376) report that women who have experienced a dismissal of symptoms and/or misdiagnosis often lose confidence in clinical services. Markovic et al. (2004:376) argue that their overall faith in doctors also takes a significant downturn. It seems likely that this decline in faith and trust in doctors must negatively impact their interactions with healthcare professionals going forward. This begs the question of how distrust in doctors after misdiagnosis can shape one’s health outcomes. Furthermore, what does this mean for those who experience misdiagnosis at a young age? Will all of their future healthcare experiences be impacted by a distrust in doctors developed at an early age? On the other hand, some women place blame on themselves, rather than their doctors (Henderson 1997:112). When doctors are dismissive of women’s symptoms, some question the validity of their concerns (Markovic et al. 2004:389). This outlook is shaped by age and generational values that place men in positions of authority over women. The majority of elderly women today grew up during a period of vast gender inequality and were raised to believe that women are weaker and less competent than men (Henderson 1997:109). Thus, they are more likely to view the evaluations of their male physicians as indisputable and instead, doubt themselves (Henderson 1997:108). The impact of this internalized misogyny upon younger women who were raised in an arguably more equal society remains unknown.
Methods
The initial plan for data collection was to conduct three focus groups of women who have personally experienced delayed diagnosis or misdiagnosis. Unfortunately, due to the COVID-19 outbreak, conducting focus groups was no longer a feasible option (see Appendix A for a list of the questions asked). Instead, I created a digital survey and posted it on various social media platforms, including the University of California Santa Barbara Student Facebook pages, as well as my personal Facebook, Instagram, and Reddit accounts. It was important to me that my research remained qualitative, even though I now had to turn to using surveys. According to feminist scholar Sharlene Nagy Hesse-Biber (2014:303), qualitative feminist research provides respondents with the freedom to answer research questions in the way that make the most sense to them and to include the information that they feel is most important. I opted for a free response format so that participants would have control over the narrative of their stories, including their demographics (i.e., race, class, gender identity, etc.). I received 21 viable responses from young women, ranging from 19-25 years old.

One of the largest downsides to survey research was that I was unable to establish the community I had hoped to build through my focus groups. The identities of my participants had to be kept confidential and the surveys were completed on an individual basis, so my participants were deprived of the opportunity to learn from each other’s experiences. In place of this, I will share my complete study with all of my participants. Given such unprecedented circumstances, this method was successful. However, I still highly recommend that future research on this subject include focus groups for building a sense of community.

Results
Participant Demographics
I gathered a convenience sample of 23 survey respondents. Of these, only 21 were viable, as 2 participants did not meet the age criteria (18-25 years old) of the study. The participants ranged from 19 to 24 years old and all identified as female. When asked to describe their racial identity, 11 responded White, 3 responded Hispanic, 1 responded Asian-American, and 6 responded Mixed Race (White and Hispanic, Pakistani and European, White and African-American, Mexican and Indigenous, and Asian Pacific Islander and White). When asked to describe their class identity, 4 responded lower class, 2 responded lower-middle class, 10 responded middle class, 3 responded upper-middle class, and 2 responded upper class.

Responses
The survey began by asking participants to share the story of their experience with misdiagnosis/delayed diagnosis. The respondents reported that they were misdiagnosed between the ages of 3 and 21 years old, with a median age of 19 years old. When asked how long it took for them to receive an accurate diagnosis, 9 responded less than one year, 3 responded between 1 and 3 years, 2 responded between 4 and 7 years, 1 responded 18 years, and 2 responded with an unspecified number of years. Participants reported being diagnosed both by male and female doctors.

Respondents were asked whether or not they had ever felt talked down to by a healthcare provider; 81% replied “yes” and 19% replied “no” to this question (see Appendix B for a chart of responses). One respondent replied, “She was condescending in tone and suggested to me, a 19 year old, that I settle down with a nice man to relieve some of my stress.” Another reported, “I feel like they think that because I’m younger, I have not experienced actual problems.” The next question asked participants if they had felt that their identity (i.e., gender, race, class, age, etc.) played a role in how they were treated by healthcare providers: 85% replied “yes”, 0% replied “no”, 15% were “not sure”. In regard to the identity categories that they felt had an impact on their treatment, respondents cited gender most often (56%), then age (26%), followed by race (11%), and lastly class (7%). One respondent replied, “Since I’m Mexican and obviously brown, I am able to pick up that they automatically assume I’m poor and uneducated… I feel that I have to prove to doctors/nurses that I’m competent.” Another respondent wrote, “...the stereotype that women are really emotional made most of the health care providers believe that depression was why I was upset. Additionally, I think that because I’m an Asian woman, a lot of them didn’t really believe that I was struggling with ADHD.”

To gauge the degree to which misdiagnosis/delayed diagnosis impacts the doctor-patient relationship, the survey asked whether or not their experiences had changed the way they felt about the doctor(s) involved. To this question, 90% replied yes and 10% replied no. One respondent replied, “I never saw the three doctors who misdiagnosed me again. I did not trust them. Medical professionals need to listen to their patients instead of putting their own biases and opinions onto them. I simply lost respect for all of them.” Another wrote, “No, I actually saw multiple doctors, I really do think that what I have is hard to diagnose.” This respondent still has yet to receive an accurate diagnosis for her health concerns. A third respondent explained, “It made me realize how much
doctors are still human… and how much their implicit biases affect their work, even if they don’t want to, they still subconsciously affect how they treat patients.” Next, respondents were asked if their experiences had changed the way they viewed all doctors and/or their future interactions with them: 70% responded “yes” and 30% responded “no.” One respondent wrote, “Yes, I am skeptical that male doctors will take me seriously.” Another stated, “No, once I found a doctor that took me seriously I was able to get the help I need. It takes a long time, but there are good doctors out there. It can be incredibly discouraging to keep looking though.” In explaining how her experience with delayed diagnosis has changed her interactions with doctors, one respondent wrote, “I am now straight up and feel the need to over-emphasize my symptoms in order to grab their attention.” Another replied, “I am reluctant to go to doctors, often out of fear of judgement.” In this way, misdiagnosis and/or delayed diagnosis appears to change how patients interact with doctors going forward.

**Discussion**

This study examined the effects of implicit gender bias in doctors on misdiagnosis in young women. Several findings indicate that patients’ identity—whether age and gender as prominent factors—impact the diagnostic process and have negative effects in terms of the accuracy and timeliness of the diagnoses they receive. The majority of participants stated that they felt their identity had influenced their treatment by a healthcare professional. This finding is consistent with those of previous studies, indicating that quality of care is impacted by identity categories such as gender and age (Henderson 1997:110). Gender and age were also the two factors most commonly mentioned by participants. However, it is likely that they were mentioned more frequently than race because the majority of the participants were White and had most likely benefited from the effects of white privilege in the doctor’s office (Chapman et al. 2013:2). Overall, most participants expressed feeling that a young woman had negatively impacted their interactions with doctors and had prevented them from receiving an accurate diagnosis—either initially or at all. Thus, seems possible that implicit biases within doctors can increase the likelihood that a young woman will either receive a delayed diagnosis or misdiagnosis.

In addition, this study explored the effects of experiences with misdiagnosis and delayed diagnosis on women’s views of the doctor-patient relationship. The majority of participants stated that after living through misdiagnosis and/or delayed diagnosis, their opinion of both their specific doctor and all doctors had changed for the worse. This was also consistent with the findings of other scholars, who found that bias not only impacts care, but also lowers patient positive affect (Cooper et al. 2012:979). Further, many described changed attitudes and behaviors when seeking the help of doctors afterward. The rationale behind doing so appeared to be grounded in a decreased belief that doctors would take their health concerns seriously. As such, the results of this study suggest a negative relationship between experiencing misdiagnosis and/or delayed diagnosis and the level of trust one has in doctors afterward.

**Limitations**

This study had several limitations that should be kept in mind when interpreting the results. First, it includes responses from only a relatively small number of participants. In addition, participants were gathered using convenience sampling. As a result, the sample used was not representative of the broader population. Thus, it leaves out several identity categories, such as the sexuality, ability, and citizenship status of the patient. To better understand the complexities of young age and implicit bias within doctor-patient relationships, a more diverse sample is necessary. Furthermore, collecting responses using a survey format may have limited participants’ responses (e.g., difficulty conveying meaning, unanswered questions, lack of discussion, etc.). Future studies may consider using focus groups, a larger sample size, and/or random sampling to improve the quality and quantity of responses.

**Significance and Conclusion**

The results of this study expand on the current literature on the gender health gap to further demonstrate the effects of doctors’ implicit biases on the accuracy and timeliness of young women’s diagnoses. An inaccurate and/or late diagnosis can have severe repercussions in terms of a patient’s physical and mental health outcomes at the time and in the future. In this way, preconceived notions surrounding youth and womanhood can negatively impact young women’s health care as well as their quality of life. My analysis also suggests that experiences with misdiagnosis and delayed diagnosis can alter patients’ trust in doctors. Thus, this phenomenon may have long-term effects that can harm patients further later on. Doctors’ implicit biases delay and/or prevent treatment, injure doctor-patient relationships, and can harm women for years. Yet, difficulty in receiving an accurate diagnosis is just one of the ways in which gender bias negatively impacts women’s health care. It is my hope that this and future larger studies like it will encourage intervention in the form of health care reform policies that will account for doctors’ implicit biases in addition to explicit ones.
Acknowledgements

1. What is your name? Again, this will be kept confidential.
2. What is your email address or the best way to contact you?
3. Please share the story that led you to the diagnosis you have now. How long did it take? How did you feel?
4. How old are you? How old were you at the time of your experience with delayed or misdiagnosis?
5. How do you classify your racial identity?
6. How would you describe your socioeconomic status?
7. How would you describe your sexual identity?
8. How would you describe your gender identity?
9. What are some of the main challenges you experienced when talking to doctors and health care providers?
10. Did you ever feel talked down to by a health care provider? Please begin by writing “yes” or “no” and then elaborate.
11. Did you feel that your identity (gender, sexuality, race, class, age, etc.) played a role in how you were treated by health care providers? Please begin by writing “yes” or “no” and then elaborate.
12. Were there any particular comments that your doctor made that stood out to you? Did these reference your identity directly or indirectly? How did you feel? Please begin by writing “yes” or “no” and then elaborate.
13. Did your experience with delayed or misdiagnosis change the way you felt about your doctor? Please begin by writing “yes” or “no” and then elaborate.
14. Did your experience with delayed or misdiagnosis change the way you viewed all doctors? Did this impact your future interactions with doctors? Please begin by writing “yes” or “no” and then elaborate.
15. Did you question the validity of your symptoms as a result of either your doctor’s comments or the diagnostic process in general? Please begin by writing “yes” or “no” and then elaborate.
16. If you could offer advice to other women/girls about how to advocate for themselves in the doctor’s office, what would you say?

Appendix B. Survey Results
Bibliography


About the Author
Casey Glasser is a fourth-year Feminist Studies and Sociology double major in the honors college at the University of California Santa Barbara. She plans to attend law school post-graduation. Afterwards, she hopes to pursue a career in public policy to achieve greater gender, racial, and socioeconomic justice. She would like
VOT and Acquisition of Stop Consonants in Spanish-English Bilingual Children

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Abstract

English and Spanish speakers learn different phonetic systems in their acquisition of their respective languages. Despite having the same phonemic contrast between voiced and voiceless plosives, the stop consonants of the two languages differ in voice onset time, or VOT. They also have different vowels with different formant values. We hypothesized that bilingual children exposed to both languages would display intermediate VOT and vowel formant values for both languages. Measuring readings from lists from four children aged three to five years, we found this to be the case for VOT for only voiced stops and not voiceless stops. VOT for this group seems to collapse into three categories: strongly positive, slightly positive, and negative, to one of which all of their stop productions belong. Vowels did not appear to have a distinct, discernible pattern among bilingual children.

Introduction

Existing research supports the idea that learning two languages at once can cause interactions between the phonetic systems of their two languages (Simonet, 2014). As our world becomes more multicultural and we engage with more and more bilingual speakers, it is important to understand how these types of interactions work. Some speakers have also been found to be able to maintain a distinction between their two phonetic systems (Goldrick et al., 2014). These ideas have been investigated with respect to VOT (Lee, 2012) and Spanish (e.g. Fabiano-Smith, 2010) before. Plosives, or stops, are a type of consonant produced with the complete closure of the vocal tract, stopping airflow, followed by release of the closure. Included in the class of sounds are the /b/ and /p/ sounds in the English words bat and pat, respectively. These two sounds are distinguished by timing (or VOT) of the release of a closure relative to the beginning of voicing. In English /b/, voicing starts at roughly the same time as closure release, whereas in /p/ voicing starts long after the release.

VOT is a dimension upon which there is a phonemic distinction in both English and Spanish, meaning that it alone can distinguish one word from another as in the English pair of words pat and bat or the Spanish word pair pata ‘paw’ and bata ‘robe’. VOT can be positive or negative. Both English and Spanish feature the phonemes /p/, /t/, /k/, /b/, /d/, and /g/; however, these phonemes are realized differently in the two languages.

In word-initial position, English voiceless stops are phonetically aspirated. This means they have a strongly positive VOT with a puff of air following the release of the closure before the start of the vowel. An example of this is shown in Figure 1. This spectrogram shows an English speaker reading the word pat (phonemically /pæt/, phonetically [phæt]) (Ladefoged, 1999). Note the long VOT indicated with a superscripted /h/ in the figure.

Figure 1, spectrogram of /pæt/
English voiced stops, in word-initial position are typically realized as truly phonetically voiceless stops; that is, their VOT is not negative (with voicing beginning before the release of the closure), but rather close to zero or slightly positive (with voicing beginning concurrently or slightly after the release of the closure). Figure 2 shows an example of this. The spectrogram shows an English speaker reading the word bat (phonemically /bæt/, phonetically [b‐æt] where the subscripted circle indicates lack of voicing during the closure). Note the much shorter VOT compared to the /p/ in figure 1.

Figure 2, spectrogram of /bæt/ with zero VOT

More rarely, English voiced stops are produced with a negative VOT as is shown in Figure 3 below. This spectrogram shows a different English speaker reading the word bat, but as is evident, there is voicing before the closure.

Figure 3, spectrogram of /bæt/ with negative VOT

This pattern does not hold when stops occur in most prevocalic contexts. In positions other than word-initial position, voiced and voiceless stops adopt a pattern wherein voiced stops have negative VOT and voiceless stops vary as a function of stress; in the onset of a stressed syllable, VOT is positive, but in the onset of unstressed syllables or after /s/, VOT is near-zero.

In contrast, Spanish stops are realized differently from English ones and vary more geographically. In general, however, most Spanish speakers realize /t/ and /d/ as denti-alveolars (t‐, d‐), meaning the tongue makes contact closer to the teeth than to the alveolar ridge. Additionally, postvocalic voiced stops, aside from after a pause or nasal consonant, are produced as fricatives (β, ð, ɣ) or approximants (β‐, ð‐, ɣ‐) (Celdrán, Planas, & Carrera-Sabaté, 2003). For our purposes, they are realized as [b, d, g] since we are only considering word initial stops read from a list. In word initial position, voiceless stops do not feature strong aspiration. Instead, they tend to have very short, near-zero VOT. This is shown below in Figure 4. This spectrogram shows a Spanish speaker reading the word “pata” “paw” (/pata/, [pata]).

Figure 4, spectrogram of /pata/

Voiced stops tend to have strongly negative VOT, as demonstrated in Figure 5, which shows a Spanish speaker reading the word bata ‘robe’ (/bata/, [bata]).

Figure 5, spectrogram of /bata/
To summarize, English and Spanish both have voicing distinctions, but their categorical boundaries are different. For English stops, that categorical boundary lies above zero milliseconds. That is, voiced stops can have small positive voice onset time and still be perceived as voiced (although sometimes English speakers do produce voiced stops with negative voice onset time). In Spanish, that boundary is at zero; any stop with positive voice onset time is phonemically voiceless and any stop with negative voice onset time is phonemically voiced.

As for vowels, English and Spanish vary even more. English vowels are numerous and vary greatly based on dialect and geography. All the English-speaking subjects in this project were speakers of California English; Figure 6 shows the set of vowels used in this dialect. As described in the methodology section, the vowels used in the world list for this project were /i/, /æ/ and /i/. Figure 6 [Ladefoged, 1999], English vowel chart

[Diagram of English vowel chart]

Spanish has a simpler vowel inventory; it uses a five-vowel system that is more consistent across geography than that of English. Figure 7 shows the Spanish vowel chart. For this project, the list from which subjects read contained the vowels /i/, /e/, and /a/. Figure 7 [Ladefoged, 2001], Spanish vowel chart

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Figure 7 [Ladefoged, 2001], Spanish vowel chart

It is evident that the English and Spanish vowel spaces vary, as vowels vary in first and second formant values (F1 and F2), as do the categorical boundaries between voiced and voiceless stops. In monolingual speakers, used in this paper to mean people who have one first language (i.e., they primarily had exposure to only one language in their childhood), these categories are relatively cut and dry. There is individual variation, but without the influence of another language or dialect, the average values from group to group of monolinguals with the same accent are similar. However, we contend that for bilingual first language learners, these categories are more malleable. The question we seek to answer is this: how are these categories influenced at a young age by exposure to another language? In immigrant families, children are routinely exposed to multiple languages. Do children differentiate between these languages when it comes to different sounds and different phonetic categories, or do these categories collapse into a single distinction used in both languages? Or are there intermediate values that these children reach in their speech production? Barlow, Jessica & E Branson, Paige & Nip, Ignatius [2013] suggests that they do. They found that in the case of /l/ in English and Spanish, bilingual children have a merged category; they maintain English allophonic variation of /l/ pre-vocally, indicating that some phonological environments allow the merging of categories cross-linguistically, but not all do. Fabiano-Smith and Goldstein (2010), on the other hand, found that there is evidence for separation and interaction between the bilingual children’s two languages in their study. This was a broad study of many characteristics of language acquisition, but they did find that frequency of sounds in the language had no impact on differential accuracy between English and Spanish, suggesting that mergers are based on something other than simply frequency. VOT has been studied this way before in Lee (2012). This study found that before the age of five, Korean-English bilingual children had not developed separate systems for oral stops between the two languages.

All of this considered, we hypothesize that to some degree, English-Spanish bilingual children will display intermediate values in their speech. For voice onset time, we predict that the average VOT value in voiceless stops in English-Spanish bilinguals will be lower than that of English monolinguals but higher than that of Spanish monolinguals, and that the average VOT values of voiced stops will be lower in English-Spanish bilinguals than in English monolinguals (i.e., more strongly negative), but not as strongly negative as seen in Spanish monolinguals. For vowels, the first and second formants of the English vowels may approach closer to the five-vowel system of Spanish. They may also produce vowels in the Spanish list that are closer to English vowels than Spanish monolinguals.
Methodology

In order to compare voice onset time, F1, and F2 values (used here to account for the differences between vowels) between English monolinguals, Spanish monolinguals, and bilingual learners of English and Spanish, we recorded these three groups reading a list of words and compared the values to one another.

The first task was to prepare a word list. The goal for this was to create a list that would allow us to compare voice onset time, first formant and second formant values between participant groups. Because English and Spanish share the set of plosives /p/, /t/, /k/, /b/, /d/, and /g/, the lists feature minimal pairs or near minimal pairs with word initial consonants differing in the phonemic voicing category of the stop and the following vowel. In Spanish, we used the vowels /a/, /e/, and /i/. The Spanish stimuli used are as follows:

Table 1, Spanish Stimuli

| pat [pæt] | bat [bæt] |
| tab [tæb] | dab [dæb] |
| can [kæn] | gan [gæn] |
| peso [peso] | beso [beso] |
| rexo [rexo] | deci [deki] |
| mesa [mesa] | gasapo [gasapo] |
| pido [pido] | rido [rido] |
| ti [ti] | di [di] |
| quit [ki] | guia [gui] |

For English, we used the same initial consonants, but used different vowels in order to measure the difference between the English and Spanish values. The vowels used were /æ/, /i/, and /u/. Using different permutations of these vowels and consonants, we formulated this word list from which the subject read:

Table 2, English Stimuli

| pat [pat] | bat [bat] |
| tart [tært] | dart [dært] |
| cap [kæp] | gap [gæp] |
| pot [pæt] | bat [bat] |
| taught [tæt] | dat [dat] |
| cot [kɔt] | got [gɔt] |
| peep [pi] | beep [bi] |
| tear [tɛə] | diï [diï] |
| key [ki] | geaz [ɡɛaz] |

The order of each of the eighteen words in both the lists was randomized so as not to bias participants in any way.

Participants were divided into three pools. Differing in their linguistic experience. Firstly, we recorded monolingual English speakers reading from the English list.

In the data, these participants are labeled as subject group E. These 21 participants were UC Santa Barbara students who participated voluntarily without compensation for their participation. They were instructed to simply read from the randomized list. Being English monolinguals, they read only from the English list. The investigator read the number, then the participant read the corresponding word, ensuring sufficient separation between the words.

The second group of subjects is bilingual children referred to in the data as subject group B. These are children between the ages
of three and five who are brought up exposed to both English and Spanish both at home and at a preschool program in Santa Barbara, California. There were four children in this group. Being bilingual, they recorded both the English and the Spanish lists. As children this young generally lack the ability to read well, we did not depend on written lists as stimuli for the children. Instead, we presented them with a series of images, also put into a random order. When a child did not produce the desired word, we would instruct them verbally. Even in these instances when children did not produce the right word based on the images alone, the images were invaluable in keeping children engaged in the task. These images are shown in the appendix.

The last group was the Spanish monolinguals, referred to in the recordings and the data as subject group S. Strictly speaking, the participants in this group are not monolingual as they do use English and a second language to varying degrees. However, they were brought up with Spanish as their only language, so we expect that their Spanish will be unbiased (or at least minimally biased) by English. For this group, we simply asked the parents of the bilingual children (group B) to read from the Spanish list in the same way group E did; therefore, there were also four participants in the group that read only the 18 words in the Spanish list. For their participation and for the participation of their child, participants in group S were paid 15 dollars. Documents related to these recordings, including consent and receipt forms, can be found in the appendix.

Figure 8, average VOT values by consonant and group

All of these recordings were done on a personal voice recorder and loaded into Praat (Weenink and Boersma 2018), where measurements were taken for VOT, F1, and F2. These measurements were put into a text grid and transferred into a spreadsheet. From this data, we completed our analysis.

Results
A. Voice Onset Time

We found a relationship between the group and average VOT, as shown in figure 8. Average VOT and group (bilingual children vs monolingual Spanish speakers both had an effect on voicing contrast (whether a consonant is voiced or voiceless and the duration of VOT). However, as is seen in Figure 8, this relationship is not straightforward. In the case of voiceless stops, the VOT values for the bilingual group (B) seem to match the language they are speaking: when producing English words, voiceless stops exhibited an English pattern with a strongly positive VOT (on average, 82ms compared to the English speakers’ 77ms), while from the Spanish list, they exhibited a typically Spanish pattern, with VOT similar to the Spanish group (24ms as opposed to the Spanish monolinguals’ 19ms). In both languages, /p/ tended to exhibit the shortest VOT of the voiceless stops while /k/ exhibited the longest. This pattern exists in all three subject groups. The averages for each initial stop for each group is shown in Table 3 below. The standard deviations are shown in Table 4

Table 3, Avg VOT from all consonants and groups

<table>
<thead>
<tr>
<th>Language</th>
<th>Group</th>
<th>Avg VOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>(E)</td>
<td>70.22</td>
</tr>
<tr>
<td>English</td>
<td>(B)</td>
<td>60.67</td>
</tr>
<tr>
<td>Spanish</td>
<td>(B)</td>
<td>53.78</td>
</tr>
<tr>
<td>Spanish</td>
<td>(S)</td>
<td>12.98</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consonant</th>
<th>VOT (English)</th>
<th>VOT (Spanish)</th>
</tr>
</thead>
<tbody>
<tr>
<td>/p/</td>
<td>10.43</td>
<td>82.43</td>
</tr>
<tr>
<td>/t/</td>
<td>80.98</td>
<td>80.96</td>
</tr>
<tr>
<td>/k/</td>
<td>102.59</td>
<td>84.79</td>
</tr>
<tr>
<td>/b/</td>
<td>-20.50</td>
<td>-44.44</td>
</tr>
<tr>
<td>/d/</td>
<td>-10.96</td>
<td>-10.76</td>
</tr>
<tr>
<td>/g/</td>
<td>-11.75</td>
<td>-23.58</td>
</tr>
<tr>
<td>Voiceless</td>
<td>77.21</td>
<td>82.78</td>
</tr>
<tr>
<td>Voiced</td>
<td>7.21</td>
<td>-12.07</td>
</tr>
</tbody>
</table>

Table 4, Standard Deviation of VOT from all consonants and groups

<table>
<thead>
<tr>
<th>Consonant</th>
<th>SD (English)</th>
<th>SD (Spanish)</th>
</tr>
</thead>
<tbody>
<tr>
<td>/p/</td>
<td>0.22</td>
<td>0.78</td>
</tr>
<tr>
<td>/t/</td>
<td>0.23</td>
<td>0.78</td>
</tr>
<tr>
<td>/k/</td>
<td>0.23</td>
<td>0.78</td>
</tr>
<tr>
<td>/b/</td>
<td>0.23</td>
<td>0.78</td>
</tr>
<tr>
<td>/d/</td>
<td>0.23</td>
<td>0.78</td>
</tr>
<tr>
<td>/g/</td>
<td>0.23</td>
<td>0.78</td>
</tr>
<tr>
<td>Voiceless</td>
<td>0.23</td>
<td>0.78</td>
</tr>
<tr>
<td>Voiced</td>
<td>0.23</td>
<td>0.78</td>
</tr>
</tbody>
</table>
While children tended to differentiate between languages in the case of voiceless stops, a different pattern was seen in voiced stops. Our hypothesis was borne out by the data in the voiced case; bilingual children have intermediate VOT values between English and Spanish. On average, we see negative values between those of English and Spanish speakers. On the whole, English and Spanish speakers had a VOT for voiceless stops of 7ms and -70ms respectively. On the English list, the bilingual children averaged -12ms, while on the Spanish list they averaged lower at -26ms. Digging deeper, it is clear that there was some variation between the bilingual children; sometimes they adopted something closer to an English pattern and sometimes closer to a Spanish one, but still with intermediate values. The complete data can be found in the spreadsheets accessed through the URL given in the appendix.

B. Vowels

We grouped English /æ/ with Spanish /e/ as “low/mid front,” hypothesizing that this category would converge to one in bilingual children. What we saw was that in English monolinguals (producing /æ/), the F1 and F2 were 847Hz and 1678Hz respectively. In Spanish monolinguals producing /e/, they were 518Hz and 2018Hz. Bilingual children produced the English /æ/ with an F1 of 1092Hz and an F2 of 2587Hz and Spanish /e/ with F1 and F2 values of 701Hz and 2511Hz. The second grouping was /‐/ and /a/, grouped together as “low mid-back”. The English monolinguals produced /‐/ with an average F1 of 753Hz and an F2 of 1261Hz, while Spanish speakers had average F1 and F2 values of 863Hz and 1710Hz for Spanish /a/. Meanwhile, bilingual children had average values of 982Hz and 1748Hz for English /‐/ and 947Hz and 1938Hz for Spanish /a/. The last grouping is perhaps the most relevant, as both English and Spanish use the same vowel: /i/. English monolinguals produced this vowel with average F1 and F2 values of 363Hz and 2478Hz respectively. Spanish monolinguals had average values of 404Hz and 2664Hz. For English /i/, the bilingual children had average values of 497Hz and 3513Hz. For Spanish /i/, they had average values of 487Hz and 3349Hz.

Vowels across all phonemes did not exhibit the pattern we hypothesized. As is evident from the graphs in Figures 9 and 10, the bilingual children did not exhibit intermediate values for the first and second formants of the vowels. There was no defining pattern that the bilingual children exhibited that monolinguals did not. Rather, the formants were simply higher in the bilingual group, likely due to the fact that the vocal tracts of children are smaller than those of the adults.

Discussion

A. Consonants
The results presented for VOT indicate that our hypothesis that bilingual children would show intermediate values between those observed for monolingual speakers of the two languages has some validity. However, it only seems to hold for voiced stops (see Figure 1 in section IV). In fact, in the case of /k/, the expected pattern almost seems to be reversed, as bilingual children exhibit higher VOT values for English /k/ than monolinguals and lower values for Spanish /k/. On the other hand, voiced stops exhibit exactly the pattern we predict; English monolinguals have, on average, slightly positive VOT, while Spanish monolinguals have strongly negative VOT and the bilingual children have intermediate negative values. VOT is less strongly negative, on average, for the English list than for the Spanish list among the bilinguals. The Spanish values also show some accommodation to English in being less strongly negative. There are numerous ways this data could be interpreted. This might indicate that there are some inherently different aspects of child speech. It is clear that children can distinguish between voiced and voiceless stops in both languages, and that, at least to some degree, they are able to distinguish between English and Spanish in this respect. However, it is also clear that their speech differs in some ways from the monolingual adult speech.

One explanation for what we have observed is that bilingual children, instead of arriving at intermediate VOT values for stops, actually form a number of different categories that can apply to both languages. While in this paper we have for the most part operated under the assumption that there are four classes into which VOT can fit (English and Spanish voiceless, English and Spanish voiced), it is possible that bilingual children collapse these categories into three. With near-zero VOT English voiced stops are somewhat comparable to Spanish voiceless stops. Strongly negative VOT exists for Spanish (and sometimes English) voiced stops, and strongly positive VOT exists for English voiceless stops; children might acquire these two “extreme” cases and collapse the intermediate cases into a single category. Due to exposure from Spanish, children may require negative VOT for voiced stops, even in English, whose voiced stops can alternate between negative and slightly positive VOT while the slightly positive category from Spanish voiceless stops can spill over into the English voiced stops, since they would have already learned it in Spanish. English voiceless stops, on the other hand, are unique to English, so are maintained only in that language in the strongly positive VOT category. This explanation is further supported by the fact that most of the children in the study are raised with Spanish first and are primarily English learners, so Spanish would likely have a greater influence on their phonetic patterns. If Spanish is the more dominant language of the two for these speakers, then it is possible that it would have a greater impact on English than English would have on Spanish (Tsui et al., 2019). This idea is shown graphically in Table 5 below.

Table 5. proposed VOT categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Negative Positive</th>
<th>Slightly Positive</th>
<th>Strongly Positive</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOT</td>
<td>&lt;0ms</td>
<td>0-50ms</td>
<td>&gt;50ms</td>
<td></td>
</tr>
<tr>
<td>Examples</td>
<td>English voiced stops</td>
<td>Spanish voiceless stops</td>
<td>English voiceless stops</td>
<td></td>
</tr>
</tbody>
</table>

This also explains why we witnessed variation in the English voiced stops among the bilingual children: while all three of these categories exist in English, only two of them exist in Spanish. Therefore, while English voiced stops can be influenced by Spanish, and are more frequently produced with negative VOT than among English monolinguals, the same is not true of Spanish voiceless stops because the strongly positive VOT category does not exist in Spanish. This idea is supported by Barlow et al. (2013) who found that English /l/ was influenced by Spanish /l/ only in pre-vocalic contexts; the category only merges in certain environments while still allowing the natural allophonic variation between dark and light /l/ in En-
glish. Similarly, with voice onset time, the bilingual children merge the VOT category only along certain lines, while still maintaining distinct phonetic systems.

However, if the Spanish and English voiced stops are not collapsed, this would argue for them belonging to distinct categories (i.e., there are two negative VOT categories). One other factor to consider is that there could be both articulatory and perceptual constraints at work in shaping the VOT patterns among the bilingual children. In the case of the vowel formant data (to be considered below), the production constraints offer a compelling account of the patterns. To tease out the possibly interfering effects of perceptual and production constraints, it would be helpful to have a control group of monolingual children. A more extensive data set would also allow for one to assess whether VOT values for voiced stops in the two languages, despite being very similar among the bilinguals in the current experiment, might actually be differentiated, though these differences are small in magnitude.

B. Vowels

As described in section IV, the vowels did not exhibit the pattern we predicted. In all cases, the first and second formants were higher in the bilingual children than in the monolingual adults. However, this is to be expected, since children’s formants are at a higher frequency as a result of their smaller vocal tracts. Aside from the higher frequency, there is no discernible pattern to the variation from the adult speech. In fact, in many cases, the pattern is the opposite of what we would expect. In Figure 11, all of the vowels are graphed with the average first formant on the y-axis and the average second formant on the x-axis. Each point is labelled with the subject pool and vowel; for instance, the bilingual subject group average values for /i/ from the English list are marked as BiE. It is evident here that there is no clear relationship between one vowel, its counterpart in the other language, and the bilingual values.

While conclusions must be regarded as speculative in the absence of monolingual children as a control group, one explanation is inherent to child speech in general. Bilingual children have many different vowels to produce: between the eleven in English and the five in Spanish, they are unable to produce specific targets for F1 and F2, especially given their higher F0 compared to adults. Because their speech coordination and physiology are not fully developed, more precise production of vowels is difficult, which might have impacted our ability to measure differences. This is supported by McGowan (2014), who found that while the vowel space is well defined quite early in life, it takes 48 months to develop very precise vowels, and regional variation (which is relevant to our discussion of bilingual language acquisition) does not arise until that time. Since our subjects are between the ages of three and five, it would be reasonable to believe that even bilingual children cannot produce these vowels precisely enough to have a unique pattern that stands out from monolingual speakers in any significant way.

C. Other comments and criticisms

There were several problems we encountered that limit the scope of this study. Firstly, the recordings for this study were conducted in early 2020 and were interrupted by the global COVID-19 pandemic. We had more recording sessions scheduled when schools closed and shelter in place orders were implemented; unfortunately, this impacted our project. We were initially planning on having more child subjects, but the global situation prevented us from doing so.

Secondly, we used adults as controls instead of children. Many other similar studies use monolingual children to compare
to multilingual children. This would have been useful, particularly in our discussion of the vowel space and formants, as it would have been much easier to compare children (who all have higher formants than adults) to each other than to compare children to adults. Rather than manipulating two variables (age and bilingualism), we could have instead manipulated one for better results. This could have also changed or improved our results for the discussion of VOT.

Conclusion

We hypothesized that for vowels and stop consonants, bilingual children would produce sounds with intermediate values between their two native languages. This study has found that bilingual children exposed to both English and Spanish do indeed exhibit different patterns from monolinguals for certain categories of sounds. Although we did not find any evidence that vowels are affected, at least between the ages of three and five, there is evidence that there is an effect on stop consonants. Voiced stops seemed to be particularly affected, as bilingual children had VOT values between the slightly positive values of English monolinguals and the strongly negative values of Spanish monolinguals. The VOT categorical boundaries that exhibit in English seem to be affected by those in Spanish, and the Spanish boundaries affect the English ones.

Further investigation will be needed to confirm this, ideally comparing bilingual children to monolingual children of the same age, as this study simply compared bilingual children with monolingual adults. The effect observed could also exist for other classes of sounds aside from stop consonants; this could also be a topic of further research. From a practical perspective, research in this area could help to improve language pedagogy in young language learners, as understanding how bilingual children develop categorical boundaries could provide insight into how they acquire language in general. Additionally, in an increasingly multilingual world, understanding these types of phonetic transfer effects may become more important in the future.

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References


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How Oral Contraceptive Use Impacts Brain Morphology: Preliminary Findings of a Population Neuroimaging Study

Margaret Hayes
Psychological and Brain Sciences, University of California, Santa Barbara

Abstract
Oral contraceptives (OCs) are used by over 100 million women worldwide. They contain synthetic hormones which may alter brain structure and function; however, only a few small-scale neuroimaging studies have examined their effects on the brain thus far. Taking a big data approach, the Jacobs Lab at UCSB launched a database which pairs structural brain scans with reproductive health histories. Preliminary findings from the database found that, compared to never users, OC users had an increase of grey matter volume (GMV) in an area of the brain called the cerebellum (n=48). In this replication study, participants showed similar results (n=24).

Introduction
Access to contraception has dramatically improved economic advancement, educational attainment, and health outcomes for women across the globe. Reproductive autonomy allows women to forgo the health risks associated with pregnancy as well as to pursue higher education – one of the many reasons why the Centers for Disease Control and Prevention (CDC) named family planning one of the 10 major public health advancements of the 20th century (Centers for Disease Control, 1999). Unsurprisingly, many women today rely on birth prevention: 65% of women aged 15-49 and 73.7% of women aged 40-49 in the United States were using contraception in 2015-2017 (Hatcher et al., 2018). However, even with such a large population of chronic users, there continues to be a need for research on how contraceptives influence human physiology. This would better allow the millions of women across the globe to make more informed decisions on their reproductive health.

The main form of hormonal birth control is the oral contraceptive (OC), which contains synthetic forms of the ovarian hormones estrogen and progesterone. These hormones inhibit the production of the messengers responsible for triggering ovulation: follicle-stimulating hormone (FSH) and luteinizing hormone (LH). This change in the hormonal milieu is responsible for the desired effects of the pill; however, hormones travel through the blood and maintain the homeostasis of many organ systems beyond just reproduction. One major site for these receptors is the brain. Although ample evidence has shown that certain brain regions are sensitive to fluctuations in ovarian steroid hormones, the impact of OC use on the brain is still not completely clear – even after 50 years of being on the market (Pletzer and Kerschbaum, 2014).

The first oral contraceptive pill, Enovid, was developed in the 1950s before much was elucidated about the role of sex hormones in reproduction or the impact of hormones on the body in general. It contained dramatically higher doses of estrogen and progesterone needed for contraceptive purposes. As a consequence, it was discovered during clinical trials that its use was associated with deadly conditions such as thrombosis and pulmonary embolism (McWilliam et al., 1963). In almost every decade since OCs were released in 1960, there has been progress in advancing its formulation, such as reduced hormone levels and alternative administration routes. To continue to improve and expand the available contraceptive options on...
the market, we need to shift attention towards a serious gap in the literature: how OC use impacts the central nervous system (CNS).

A large body of literature demonstrates that major endocrine events, such as puberty and menopause, impact CNS function. For example, during the pubertal transition, a steady decrease in grey matter volume (GMV; a type of brain tissue comprised of neuronal cell bodies) is observed in the frontal and parietal cortex of the brain, alongside marked changes in behavior and emotion (Schulz and Sisk, 2016). During menopause, the decline in ovarian hormone production is associated with CNS changes such as ‘brain fog,’ reduced hippocampal volume, and poorer performance on memory tasks (Hampson E., 2018; Leranth et al., 2002; Jacobs et al., 2016).

Beyond these large-scale endocrine events, there is now increasing evidence that smaller fluctuations in hormone concentrations can significantly impact the same circuits. For example, as estrogen concentrations rose across the menstrual cycle, women performed better on a verbal fluency task (measured by quickly recalling words in a semantic category) and worse on a mental rotation task (measured by the ability to identify rotated 3D objects) (Maki et al., 2002). Therefore, it is possible that these circuits are modified in women who do not experience a natural cycle - one subset being the hundreds of millions of women who use OCs.

Of the handful of neuroimaging studies which have begun examining OC use, there have been conflicting results. One study found that compared to never users, women using OCs had significantly larger GMVs in certain brain regions (prefrontal cortex, parahippocampal gyri, and fusiform gyri; Pietzker et al., 2010). Other researchers have found a decrease in the amygdala and parahippocampal gyrus volume after just three months of OC use (Lisofsky et al., 2016). These differences in findings are likely due to divergent study design (within versus between subjects), relatively small sample sizes, and the fact that critical factors of OC use (e.g., age of initiation, duration of use, and formulation) were not fully controlled for.

These discrepancies call for a large-scale neuroimaging database, which accounts for the many variables concerning reproductive health history.

To that end, the UCSB Brain Imaging Database was created to systematically examine OC use. The database houses a collection of standard magnetic resonance image (MRI) sequences from the majority of participants who are scanned at the University’s Brain Imaging Center. The participants’ scans are then matched with an online Qualtrics questionnaire, which asks extensive questions regarding reproductive health history and hormone use. A preliminary analysis from the first 100 database participants (resulting in a final sample size of 48 women with no prior pregnancies, no history of hormone use other than OC, and other exclusionary criteria) revealed significantly greater GMV in the cerebellum of OC users relative to women who had never used OC. The present study aimed to test the replicability of these results with a new cohort of database participants (n=24).

General Overview
Subjects
Subjects were recruited from the pool of all participants scanned at the UCSB Brain Imaging Center (BIC). Participants from any research project who had an MRI were invited to participate in this ancillary study. It consisted of a 10-minute online Qualtrics questionnaire, and all participation was voluntary. This study was IRB approved and allowed for the collection of de-identified data from all BIC participants.

In this replication, a total of 56 subjects completed the questionnaire. Thirty-two subjects were eventually excluded for previous pregnancies, other hormone use, endocrine disorders, head trauma, low-quality MRI images, or any psychiatric/mood disorders. This yielded a final sample of 24 women (aged 18-24). Women were divided into groups of current OC users and women who had never used OC. In keeping with the discovery dataset analyses, in this replication study, “OC Users” and “Never-Users” were matched for age, age of menarche (puberty), and BMI (see table 1).

Table 1. Participant demographics for both cohorts.

| MRI analysis (for replication purposes) |
Data was acquired with a Siemens 3T Prisma MRI scanner. The participant’s T1 scan, a high-resolution structural image taken at the
beginning of all fMRI studies, was matched with their corresponding questionnaire data. The images went through preprocessing, where they were normalized to an average brain template and segmented into the different tissues - gray matter, white matter, and CSF (cerebrospinal fluid). Bias correction removed intensity non-uniformities and images were smoothed with an 8 mm kernel. This was done in a Matlab program called SPM12 using the Computational Anatomy Toolbox (CAT12).

Analyses were performed in SPM12 to compare the GMV between OC users and never users (2-sample t-test). To assess if there was an effect of duration of use on GMV, ‘months of use’ was entered as a covariate of interest in an analysis of OC users [multiple regression]. To correct for variations in head size, total intracranial volume (TIV) was included as a covariate of no interest in all analyses. Results were corrected for multiple comparisons, p < 0.05.

**Results**

**Current OC Users versus Never Users**

In the original cohort, greater cerebellar GMV was observed in current OC users compared to never users (p < 0.05; see Figure 1). In concordance with these previous findings, a whole-brain 2-sample t-test of the current cohort revealed significantly greater GMV in the cerebellum of current users compared to never users (p = 0.041; see Figure 2). According to the Stoodley et al. (2009) cerebellar mapping, where the cerebellum is divided into lobules (regions), this cluster is located in the posterior cerebellum in lobule VI (MNI x, y, z = 3, -17, -75; k = 451 voxels (a measure of three-dimensional space), extending bilaterally.

**Discussion**

We consider the present analysis to have replicated the initial findings as we also observed greater cerebellar GMV in OC users relative to never users. However, the two cohorts revealed GMV differences in distinct regions of the cerebellum. The initial findings were located in lobules IX and VIIb [MNI x, y, z = 6, -33, -74] while the current cohort’s effects can be observed in lobule V and VI (MNI x, y, z = 3, -17, -75). In both cohorts, the effects were observed bilaterally. The regional differences are likely due to the small sample size of the replication cohort and will be re-examined with
greater power once larger cohorts are amassed.
As the database continues to grow, checking in (even with small cohorts) can provide valuable insight to which brain regions are particularly sensitive to hormonal fluctuations. These insights inspire behavioral/cognitive research topographically targeted to the known functions of those affected areas. According to a meta-analysis of functional topography in the cerebellum by Stoodley & Schmahmann (2009), the brain regions that displayed significant differences in the current replication have been functionally implicated for working memory tasks. In the right lobule, this area extends from \((6, -78, -26)\) to \((18, -70, -18)\), and in the left lobule it extends from \((-14, -88, -20)\) to \((-8, -72, -12)\). These differences in the current study fall in a similar area with a peak at \((3, -75, -17)\) and sub-peaks at \((8, -75, -17)\) and \((14, -71, -23)\). The hypothesis that OC use may impact working memory performance is supported by work from Mordecai et al. (2008), which showed an increase in working memory performance for OC users during their active pill phase versus their inactive pill phase.

**Summary**
This study contributes to an emerging body of work, indicating that OC use modulates brain structure (Lisofsky et al., 2016; Pletzer et al., 2010). Although an increase in grey matter was observed with OC use, it is difficult to make conclusions on how this change relates to behavior and cognitive ability. While some evidence suggests that GMV in the cerebellum is positively correlated with performance on topographically significant tasks, it is not always that simple (Ramanooli et al., 2018). More volume does not necessarily equate a positive effect; grey matter reduction is sometimes beneficial, representing specialization or maturation. This can be observed during the onset of menses (puberty), where many cognitive functions are enhanced, yet a marked decrease in GMV is observed (Peper et al., 2011).

Thus, in order to fully understand the implications of synthetic hormone administration, there is a strong need for systematic population level studies, which account for the many factors associated with OC use, including the age of initiation, duration of use, and pill formulation. This imaging database initiative continues to expand, with researchers at UC Berkeley now administering the questionnaire to their MRI participants in hopes of using big data to answer these long overdue questions. With implications for half of the population, viewing neuroscience through a woman’s health lens and further establishing the effects of OC on the brain is a global public health issue.

**References**


About the Author
Margaret Hayes, a Biopsychology major and student researcher, uses magnetic resonance imaging (MRI) to examine the effects of hormones on the brain. She is passionate about advancing public health, and plans to continue onto graduate school with a focus on behavioral neuroscience.
From Data to Interactive Visualizations: A Tool for Modeling and Forecasting Longevity Across U.S. Subpopulations

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Abstract
Longevity analysis provides valuable public health facts that can influence public policy, business decision-making, or new academic research directions. We must explore and interpret mortality data to gain these insights. This paper introduces a Longevity Forecasting Tool that we created with Shiny, an R package that facilitates interactive dashboard development. This tool showcases the use of Gaussian process regression for modeling mortality data. We use publicly available detailed mortality data from the Centers for Disease Control Wide-ranging Online Data for Epidemiologic Research (CDC WONDER). This tool uses interactive data visualizations to engage users to better understand the mortality experiences across several U.S. groups.

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Introduction
Data science merges statistics and computer science methods with some domain knowledge [4]. We use data science to interpret, understand, and communicate our data, processes, and/or results to those interested in gaining insights from them. Analytical dashboards are an excellent option to communicate our scientific findings. They provide interactive graphical illustrations of data that allows users to identify and share valuable trends and insights on the spot. They can also be used to facilitate data exploration for those with little to no programming knowledge, whether it be students, researchers, decision-makers, or anyone interested in learning from data. This project aims to create an interactive dashboard that statistically models and forecasts mortality trends among racial groups in the United States. What makes this dashboard different from other mortality dashboards is the modeling methodology, which considers the year over year improvements of mortality by cause of death.

One of the motivations for this project stems from a retrospective study conducted by renowned economists Anne Case and Angus Deaton in 2015, which revealed that mortality improvements in our top two causes of death, cardiovascular disease and cancer mortality, masked an increase among “deaths of despair” [8]. This is the term they coined in their 2017 study to refer to deaths grouped by suicide, drug overdose, and alcohol-related liver disease. Case and Deaton note that an increase in these deaths was most aggressive among the White, middle-aged group, consequently increasing this group’s all-cause mortality rates [7]. When compared to other groups by race within the United States and other rich countries, the White, middle-aged group was the only group showing an increase in all-cause mortality [7]. Case and Deaton’s findings became front-page news and a best-selling book, leading to numerous further studies implementing various analytical methods and grouping of the data in different ways [2], [5], [6], [15]. Inspired to dig further, we employed a machine learning method to model the mortality data used.

The benefits of modeling the data are to quickly smooth out observation noise to identify patterns and make predictions on future longevity. Noise in data refers to extra information that does not add any value to our analysis, often seen as very sharp lines in a plot. Smoothing techniques then allow us to forecast future scenarios. Predictions in mortality are especially valuable since they could offset the 2 to 3-year lag of compiling this data and let us know what is likely happening right
now. We used the Gaussian Process (G.P.) regression modeling approach that was introduced to model mortality data in 2018 by Michael Ludkovski, Jimmy Risk, and Howard Zail [13]. The G.P. modeling approach provides simultaneous modeling of mortality rates and improvement factors, uses smoothing techniques that eliminate random observation noise in the data, makes predictions for any age and year combination, and automatically quantifies associated uncertainties [11], [13]. This modeling method would be of particular interest to actuaries and demographers alike.

An actuary specializes in quantifying and managing risk and has a deep understanding of implications. In mortality studies, they ask age and population-specific questions, take a more individualistic approach to grouping, and use statistical modeling to analyze mortality rates and improvement factors. Improvement factors quantify the change in mortality year after year and are too specific to be used in a demographer’s mortality analysis approach. Population-specific questions from an actuarial perspective do not consider many factors that a demographer does. There is no need for data on fertility, emigration, or infant mortality when performing longevity analysis. Actuaries analyze data, identify which patterns are systemic, which are noise, measure uncertainty, and make short term projections to manage associated risks of specific groups.

Case and Deaton use raw death rates for their analysis and primarily take on a demographer’s approach [7], [8]. One key component they use to indicate this type of approach is age aggregation (grouping ages 50-54, for example) [8]. This is standard of a demographer whose questions are related to the general makeup of a population, asking about its size, distribution, and spread [3]. They consider population attributes such as fertility, infant mortality, emigration, life expectancy, and morbidity. Their goal is to see a large-scale picture of a population, make projections that may go decades into the future, and see trends in raw data [3]. For this project, we used a more actuarial inclined approach.

We used the Underlying Cause of Death: Detailed Mortality data from the Centers for Disease Control Wide-ranging Online Data for Epidemiologic Research (CDC WONDER). The CDC WONDER database is a free, publicly available data query system with various public health datasets. It provided us with one of the same data sources that Case and Deaton used in their analysis [8]. We used racial groups categorized by Hispanic ethnicity, gender, and cause-of-death. Cause-of-death options include all-cause, cardiovascular disease, cancer, stroke, and external causes. The external causes option most closely corresponds to Case and Deaton’s “deaths of despair.” The objective is to allow users to explore and analyze the mortality experiences among different United States (U.S.) population segments and show the Gaussian Process modeling’s implementation on this data. With this dashboard, we can examine longevity inequalities and diverging or converging mortality experiences. We can also identify cohort effects, compare mortality improvements among specific populations, and quantify associated uncertainties. Cohort effects are common mortality experiences by specific age group trends over time (like a particular generation).

We create this dashboard completely in RStudio, a free, open-source statistical programming environment [14], using the Shiny package, a popular module package for interactive dashboard development [10]. Shiny provides app developers the flexibility needed to build and stream interactive web apps to communicate complex results engagingly. An analytical dashboard developed with Shiny is widely known as a Shiny App. Since thousands of Shiny Apps exist, Shiny is considered a leading ecosystem of interactive dashboards in the scientific community. Anything that can be done in RStudio can be translated into Shiny. It is easy to deploy from the RStudio console to quickly be made accessible to anyone with an internet connection and also reduces the need for a full-fledged web developer [10]. The Shiny app for this project is publicly available at the following URL: https://rosalia1010.shinyapps.io/Longevity_Forecasting_Tool/

This paper is organized as follows: (2) General Overview: contains definitions of concepts and terminology used to understand longevity analysis, (3) Data: provides detailed information on the data used for this project, (4) Introduction to our Forecasting Tool: introduces the forecasting tool and its components. The output graphs include: (4.1) Smoothed Mortality, (4.2) Forecasting Mortality, (4.3) Mortality Improvement Factors, and (4.4) Mortality Improvement Factors Heat Maps.

General Overview

Case and Deaton’s (2017) findings focus primarily on middle-aged mortality experiences and include populations grouped by education level. Since aggregating education level requires incorporating data from different sources, we will focus only on the populations as grouped by in the CDC WONDER Detailed Mortality Database. We will not be able to group by education level. Figure 1 shows two all-cause mortality plots: (a) one by Case and Deaton (2017) and one using our data from the CDC WONDER database. Figure 1(b) shows mortality for age 50 only, representing a subset of the age-group used in 1(a) Case and Deaton’s graphs. Notice that the curves are somewhat pointy; this reflects the use of raw mortality data, which
means no statistical modeling.

Both graphs show similar trends of the Black non-Hispanics (BNH), White non-Hispanics (WNH), and Hispanics (HISP) subpopulations. The mortality rates (y-axis) in figure 1(a) are higher than for those in figure 1(b) because 1(b) illustrates a subset of the group used in 1(a). There is a substantial decrease in mortality for the BNH population (top curve) over time (x-axis), indicating drastic mortality improvements experienced by this group. This improvement shows a reducing gap in mortality disparities illustrated by the narrowing white space between the lines. Both figures 1(a) and 1(b) show this trend. The Hispanic population (bottom curve) appears to be slightly decreasing over time in both graphs as well. The White non-Hispanic group (lower middle curve) is the only population to experience a non-decreasing trend in all-cause mortality during the same time frame. Since both figures show this, it supports Case and Deaton’s (2017) findings that the White non-Hispanic population has experienced an increase in all-cause mortality.

Mortality has been strictly decreasing since around the 1950s because of medical and technological advancements and improvements in healthcare [1]. This is why an increase in all-cause mortality is alarming. There are some terms and concepts that are important to understand for mortality analysis. The following sections provide a general overview of Gaussian process regression, the modeling method we use, and its outputs: mortality rates and improvement factors, the metrics used for analysis.

**Gaussian Process Regression:** Gaussian Process regression is a probabilistic machine learning tool. Its unified modeling of mortality rates and improvement factors produces a smoothed probability surface [13]. A probability surface is a 3-dimensional representation of a 4-space result. In our case, the outputs are mortality rates and improvement factors over age and years. The forecasting tool illustrates different slices of the surface the G.P. model creates to isolate and better understand some key components of longevity across the various groups. G.P.’s main application is to fit a function to historical data and quantify the uncertainty around it. Historical data is data that is observed and collected (also known as in-sample data). In this sense, the approach is entirely data-driven. The credible bands illustrate the uncertainty and are depicted as shaded ribbons on graphs. They highlight the scenarios of projections that are most likely to occur. The ribbons can also be thought of as the scope of our model’s uncertainty. The further ahead in time we want to project, the wider these credible bands become because there is more uncertainty.

Uncertainty comes from various places, but in general can stem from 3 categories: (1) uncertainty through unexpected events (like a pandemic), (2) through structural changes (like drug overdoses which may take a long time to identify), or (3) through data estimation. The last group (data estimation) is the most relevant here since getting every person’s information from a whole population is impossible. Imagine trying to gather data on 300 million people (the approximate number of people in the United States according to the U.S. Census Bureau). Instead, we do our best to use data that are representative of the whole population in calculating the best estimates of the true population. The uncertainty comes with how accurate those data and estimates are of the true population and is accounted for in models as error terms and confidence intervals.

As a setup to G.P. regression, we take in a pair of input variables x (age and year) linked to output variable y (log-mortality) through a function f and error term. The collection of f’s for each age and year combination creates the probability surface and is the Gaussian process realization [11], [13].

\[ f(x) \sim \text{GP(\text{mean} = m(x), \text{covariance} = C(x,x))} \]

The mean and covariance are essential components of the G.P. We initially tried using a constant mean function on age and year, but it made future projections of mortality rates rise unreasonably, which did not make sense to our data. The constant mean function in our model tended to average mortality over the years. Since this is not a real-life characteristic of mortality over time, we decided to use a linear mean function, which considers age (i.e., a person increases in age linearly) and time (i.e., years increase linearly as well) linearly. The covariance function, also known as the G.P.’s kernel, controls how smooth the probability surface is. There are many kernel functions to use and many careers that focus on studying kernel functions. For simplicity and reproducibility, we will
only state which commonly used kernel function our models use: squared-exponential kernel.

Mortality Rates vs. Improvement Factors: A mortality rate is the fraction of the number of deaths in a population over the total number of people in that population per time unit. The time unit used here is in years. A mortality improvement factor is the amount of improvement when comparing the current year’s mortality rate to the previous one. Essentially, a mortality improvement factor is like the slope of a mortality rate curve. If the mortality rate stays the same for two years in a row, there is no mortality improvement (mortality improvement factor = 0). Alternatively, if the mortality rate decreases from the previous year, there is a positive mortality improvement. If the mortality rate has increased from the previous year, then there is a negative mortality improvement. Examining mortality rates is a general rule of thumb for both demographers and actuaries but examining mortality improvement factors is actuarial. Mortality improvement factors provide a yearly account into the direction mortality rates are moving. In general, mortality improvement factors and mortality rates are defined as follows:

\[
\text{Mortality Rate} = \frac{\text{R of People who died in a population segment (per year)}}{\text{Total # of people in that population segment}}
\]

\[
\text{Mortality Improvement} = \frac{\text{Mortality rate at a specific age for a specific year}}{\text{Mortality rate for the same specific age but for the previous year}} - 1
\]

Data

The data used is collected by the National Center for Health Statistics (NCHS) and provided to the public by the CDC WONDER’s public online databases. The specific database used is the Underlying Cause of Death: Detailed Mortality database.

Our data set included the years spanning from 1999 to 2014. We used single age years beginning from age 50 to age 84 since our interest is in modeling longevity. We included sex data of males and females. We grouped Hispanic origin and race into a single demographic option, like in Case and Deaton’s (2017) study. For Hispanic origin, we only used the observations that provided Hispanic origin information (“Hispanic or Latino” and “not Hispanic or Latino”). We excluded observations with a “Not Stated” entry under Hispanic origin because these entries do not have corresponding populations calculated [9]. Entries that state “not Hispanic or Latino” are then grouped into a race category. We used the four race options available: American Indian or Alaska Native, Asian or Pacific Islander, Black or African American, and White [9].

The cause-of-death list used is the tenth revision of the International Classification of Diseases (ICD-10 113 Cause List) code list, used after 1999 for classifying deaths [9]. Our dataset has 136 causes of deaths, with 52 “Level 1” causes. Level 1 causes are “rankable” causes of death as indicated by the NCHS [9]. There are 4 remaining levels for causes that are subsets of the Level 1 causes. For instance, all level 2 causes of death add up to the level 1 cause they are a subset of, all the level 3 causes add up to the level 2 cause they are subsets of, and so on. An example would be malignant cancers as a level 1 cause, with breast cancer, prostate cancer, skin cancer, stomach cancer, and more being level 2 causes. The cause of death observations originated from the physician’s information on each death certificate [9]. Our longevity forecasting app currently has 6 cause of death groups: all-cause, cardiovascular disease, strokes, cancer (malignant), and external causes. The exposed population entries are between-census estimates from the U.S. census counts [9].

The Underlying Cause of Death database allows for up to 5 groupings. The data of interest included six data variables: age, year, gender, Hispanic origin, race, and cause of death. We used more involved methods for extracting the data with R code and the help of Mr. Howard Zall, an actuary and partner at Elucidor, LLC.

The data was grouped as follows:

- Sex: Male, Female, Both (3 options)
- Demographic: All, Hispanic Origin, Black non-Hispanic, White non-Hispanic, American Indian or Alaska Native non-Hispanic, Asian or Pacific Islander non-Hispanic (5 options)
- Cause of Death: Aggregated, Cardiovascular Disease, Cancer (Malignant), Stroke, External Causes (5 options)

Mortality Modeling and Forecasting Tool

The longevity forecasting tool engages users to explore mortality rates and improvement factors across different U.S. subpopulations. It uses Gaussian process regression models based on which groups are selected. The “Choose Population” column is where we choose the groups of interest. Options include groups by sex, demographic, and cause-of-death, which means that there were 3×5×5 models (75 models). Additional cause of death scenarios can be implemented upon request. More information on making such requests is found in the Longevity Forecasting Dashboard’s “Cause of Death Table” tab.
In Gaussian Process regression, the data is smoothed via in-sample predictions [13]. Our graphs visually demonstrate slices of the mortality probability surface produced by the G.P. models. The following are the output graphs: smoothed mortality across ages, smoothed mortality across years, smoothed mortality improvement curves across ages, and improvement factors as heat maps. Each output graph has options to save the graph as a .png file, zoom in and out on specific areas, hover over the graphs to data at a particular point, or compare data at specific points by clicking on the legend to include or exclude chosen populations. Most output graphs also have reactive elements that allow users to change the data they are examining. Some examples include changing the year, age, number of years to forecast, and including or excluding confidence intervals or raw observations.

**Smoothed Mortality**

We illustrated smoothed mortality over ages in single years from 1999 to 2015. Figure 2 shows the smoothed mortality over a ten-year timeframe for the populations mentioned previously. We identified that the BNH male population experiences higher rates of cardiovascular disease mortality when compared to the WNH male population. Notice that the overall mortality rates have decreased from 2005 to 2015, suggesting an overall decrease in cardiovascular disease mortality for all sub-populations over this ten-year period. We also identified a slight disparity convergence around ages 50-55. The gap between the curves appears smaller in that area for the year 2015 than it does for the year 2005.

![Figure 2. Cardiovascular disease mortality rates among Black non-Hispanic and White non-Hispanic males, 10-year difference.](image)

Additionally, it is usual for overall mortality curves to increase as age increases because the risk of dying increases roughly exponentially with age [12]. This pattern was observed and described in 1825 by Benjamin Gompertz as the law of human mortality, a law that still holds true. The Gompertz model has been widely studied and translated into other disciplines. It provides a powerful way to examine mortality patterns [12].

**Forecasting Mortality**

The next tab allowed us to see changes in smoothed mortality over time and future mortality predictions for single age, as shown in Figure 3. The vertical distance between the two curves in Figure 3(a) is a measurement of the disparity between them. Over time, this disparity among those aged 50 reduces. The convergence is primarily due to the mortality improvements experienced by the BNH group, illustrated by a considerable decrease in this curve. We also saw slightly declining mortality rates for the male WNH group. For the groups aged 80, there appeared to be similar mortality improvement rates, illustrated by paralleling curves. Again, it is evident that the BNH group experiences higher cardiovascular disease mortality rates.

![Figure 3. Cardiovascular disease mortality rates among Black non-Hispanic and White non-Hispanic males, 10-year difference.](image)

This Forecasting tab has many reactive options. Users can change the age of interest, the number of years to forecast, view the 95% confidence intervals, and include the actual observations against the fitted model. The confidence intervals, shown as ribbons, highlighted all the possible curves that we can use to fit the data we provide. The option for “in-sample observations” showed black dots on the fitted curves. These black dots represent real raw values, the actual data. They showed us how well the model has fit the in-sample data. Users can also view forecasts of up to 20 years into the future.
Mortality Improvement Factors

Mortality improvement factors can be slightly less intuitive at first. Figure 4 shows the mortality improvement factors for the two groups in 2012. The bold line at mortality improvement = 0 means that compared to the previous year, the current year has not changed in its mortality rate. The farther away the curve is from this line, the larger the increase or decrease in mortality rate experienced. If the curve falls below this line, the mortality improvement factor is negative. Thus, the population of interest has experienced an increase in mortality. If the mortality improvement curve is above this line, that means that the population has experienced a decrease in the mortality rate. Thus, the mortality improvement factor is positive. The reason we look at mortality improvement factors is that year after year mortality rates change slowly. By examining mortality improvements, we have a better visual of the severity of change in mortality rates year after year. For decades, these curves have been strictly positive.

Figure 4. Mortality improvements for 2012.

Figure 4 shows the mortality improvement factors of the two groups we have compared for the year 2012. The improvement curves of both groups get close around ages 45, 72, and 84. This suggests similar improvement rates at that age for both populations. The WNH subpopulations improvement curve at the bold line (where the improvement factor = 0) tells us there is no mortality improvement for this subpopulation at age 58. Overall, the improvement factor curve for the BNH subpopulation is higher, which means this population has experienced higher mortality improvements than the WNH population, supporting our previous note about the BNH subpopulation experiencing larger decreases in mortality rates relative to the WNH population. This supports Case and Deaton’s (2017) findings that show that the all-cause mortality gap between the BNH group and other racial groups are decreasing. They indicate that it is mainly due to improvements in our top cause-of-death contributors.

Mortality Improvement Factors Heatmap

Mortality improvement factors can be illustrated across ages and years through heat maps. The color bar on the right indicates the improvement factor level by hue. The lighter green colors indicate positive mortality improvement, and the darker colors indicate negative improvements. We can read heat maps vertically, horizontally, and diagonally.

Figure 5 shows a heat map of the improvement factors of both groups. A single row illustrates mortality improvements over age, a single column illustrates mortality improvements over a year, and a diagonal line illustrates mortality improvements by cohort. The arrows on the heat maps in Figure 5 highlight the cohort effects. Cohort effects show us generational trends as certain generations experience mortality. In 2000, the baby boomer generation was between 36-54 years old. This generation shows a cohort effect of lower mortality improvements illustrated by the darker shades along the arrows. We see reduced improvement rates by the change in colors in the area consistent through many older ages.

Figure 5. Heatmaps for white non-Hispanic males with cardiovascular disease and for Black non-Hispanic males with cardiovascular disease.

Summary

Mortality modeling provides us with an avenue to measure public health and manage associated risks. Being able to see trends among different subpopulations and in cause-specific groups, we can identify key factors that contribute to the nation’s overall longevity trend. This longevity exploration tool uses a Gaussian process approach to modeling mortality that provides unified modeling of mortality rates and improvement factors which take into consideration the mortality improvements year after year. This approach also quantifies uncertainty for in-sample modeling and
future trajectories. This allows us to examine the longevity experience of specific groups defined by sex, ethnicity, and cause of death through a series of mortality rates and mortality improvement factors graphs.

The next step of this project is to refine the tool to include more interactivity. This will enhance user experience and facilitate understanding through interactive data visualizations. We also aim to dive deeper into the data and perform an analysis using this tool and modeling method. We aim to understand the cause-specific mortality experiences of different groups. This project could be enhanced by including additional cause-of-death criteria.

References


About the Author
Rosalia Hernandez is a fourth-year actuarial science major at the University of California Santa Barbara (UCSB). She enjoys learning about emerging technologies and methods in the data science realm and engaging in conversations about their applications, impacts, and implications. As a first-generation non-traditional student, she is passionate about making data insights accessible to everyone and strives to empower and encourage minoritized students to pursue research. Her goal is to continue her education in a graduate program in statistics and ultimately seek a professorship position.
Soaring into Los Angeles: The 1910 Los Angeles International Aviation Meet

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Abstract
The 1910 Los Angeles International Aviation Meet, inaugurated Los Angeles’s inextricable link with the aviation industry. Focusing on key historical actors and art of advertising used to sell the idea of flight to the public, this project posits that the 1910 Air Meet, not only helped to shape aviation, but also inspired the future of flight. This thesis tells the history of the airplane detailing the story of Los Angeles’ boosterism and the role said boosters played in the ultimate stabilization of airplane into a functional, reliable, and lucrative technology and industry.

For ten days in January 1910, an estimated 226,000 spectators converged on Dominguez Field in Los Angeles to witness the United States inaugural aviation meet. Over the course of the ten days, the public and the world observed brand-new technology and watched leading aviators perform unimaginable feats at the 1910 Los Angeles International Aviation Meet. Following the success of the world’s first aviation meet in Reims, France in 1909, Los Angeles’ boosters sought to bring such excitement to the Southland promoting aviation and Los Angeles in kind. Complete with a course of a mile and a half in length, the 1910 event promised to deliver to Los Angeles multiple firsts in aviation. Climbing into the heavens above Los Angeles, pilots Glenn Curtiss, Louis Paulhan and Roy Knabenshue appealed to the imagination. The daring Frenchman, Paulhan, unexpectedly took to the sky amidst the performance of two dirigible balloons. Emerging from a gully, he circled the grandstands, shot out into the distance and proceeded to land his plane center field. Paulhan later demonstrated precise control maneuvering his plane only a few feet above the heads of spectators as he continually ascended and descended. Landing a mere 100 feet outside of the tent assigned to house his plane, the spectacle came to an end as, “men shouted themselves horse, while women applauded and waved handkerchiefs.” Elated by the fervor he created, Paulhan then pranced gayly to his tent. Not to be outdone, Knabenshue, zipping through the sky, approached the main stage area unaware of the latent impact that the proceeding would affect. Above the field, “with an officer of the U.S. Signal Corps aboard, he maneuvered over the aviation field much as it might be worthwhile to do in an actual theater of war.” With targets demarcated below on the field, Knabenshue proceeded to drop sandbags down below. Knabenshue’s demonstration showcased to the world the possibilities for the airplane in a military capacity.

Large color poster of the 1910 Air Meet. Courtesy of CSUDH
With each day, the 1910 Los Angeles International Aviation Meet brought new records set, technologies unveiled and daring displays of bravery and danger. For instance, Pilot Charles Willard, in an attempt to complete the official sky course, experienced complete motor failure in his Curtiss No. 1 airplane forcing him to land prematurely. Despite the mechanical trouble, Willard had managed to fly for a full minute and twenty-three seconds setting a new record for longest flight in an airplane. In another record attempt, famed American pilot Glenn Curtiss took to the sky in an effort to best previous records set in Reims, France. Rising to a height of twenty feet in 500 yards of flight, Curtiss’s propeller broke forcing him to stop his engine. As crowds looked on with fear, Curtiss “sailed gracefully to the ground when the propeller ceased to revolve.” Such daring heroics and displays of apt control over the airplane into a functional, reliable, and lucrative technology used to sell the then fledgling idea of flight to the public, this project posits that those pioneering aviators who matured following the 1910 Air Meet, not only helped to create the aviation industry, but also inspired the future of flight by presenting aviation to the Los Angeles public. This thesis tells the story of the airplane during its crucial formative years detailing the story of Los Angeles’ boosterism and the role said boosters played in the ultimate stabilization of the airplane into a functional, reliable, and lucrative technology and industry. Through an in-depth analysis of aviation’s crucial formative years, the thesis looks at how aviation came into contact with the city of Los Angeles and its boosters. Following the story of those early pilots present at Dominguez Hills who saw the airplane as a tool for sport and those boosters who took the airplanes interpretive flexibility in other directions, Los Angeles’ unique blend of capital, media, celebrity, and space will be shown to have critical-ly lent itself to supporting aviation’s growth. Links to other industries will also be explored critically asking how aviation both differed and benefited from the region’s oil and other industries. LA’s boosters helped to manufacture the idea of aviation both funding and promoting airplanes, while early aviators or more simply put pilots, utilized prize money and sought out boosters to fund projects aiding the expansion of aviation into the consciousness of Los Angeles’ identity both defining and selling the merits of the airplane through spectacle.

The Boosters

In Los Angeles, a network of untapped boosters existed that was primed for the spectacular awe and wonder that witnessing flight afforded. These boosters and the boosterism that they practiced emerged as the act of promoting (“boosting”) the city of Los Angeles, with the goal of improving public perception of the city and attracting both tourists and migrants alike. With America’s westward expansion, boosterism became part of city development as civic leaders and owners of real estate made promises of growth, with the hope of attracting residents and inflating land prices. LA’s boosters aimed to modernize LA in turn promoting increased migration and tourism. Previous booster events centered around the city’s past. However, with modern large-scale projects in the works, a desire to look to the future emerged. To boosters, few spectacles were more forward thinking than aviation.

With the prospect of an air meet floating, it was up to boosters and aviation enthusiasts to raise funds for the second international air meet. Roy Knabenshue knew how daunting a task this would be and contacted Dick Ferris, a Los Angeles athletic promoter and balloon enthusiast. Ferris set out to gain the support of the local business community. Critically, Dick Ferris “got support from Harry Chandler’s Los Angeles Times and William Randolph Hearst’s Los Angeles Examiner, financial backing from the Los Angeles Merchants and Manufacturers association, and a $50,000 pledge from Henry H. Huntington.” Ferris knew how to sell walking into the Examiner office introducing himself as the representative of Roy Knabenshue among other St. Louis aviators. The basis of Ferris’s pitch sought to sell the idea of an air meet to the business class on tourism. Such an event would bring all sorts of visitors to LA. In addition, the meet would function as a proving ground for various designs and ideas to come into contact and draw off one another. At the time Los Angeles was looking for stimulus. This needed to be something that would draw not only the nation’s attention to Southern California, but the world’s too. Reflecting this desire, “the merchants and manufacturing associations wanted to give a boost to LA.” Ferris held the answer with an international event that would provide this desired stimulus for Los Angeles’ economy and aviation. A promoter by trade, Ferris would later serve as the general manager of the meet. It was in part his vision to capitalize and capture the early fervent surrounding aviation in such a
grand fashion. As booster support was being secured, the question remained of where to hold the United States’ first international air meet.

Production of the 1910 meet was not the region’s first massive undertaking, but rather the next forward-thinking project in the progression of Los Angeles’ growth. With large oil, agricultural and an emerging film industry, Los Angeles and its residents were no strangers to supporting economic growth in the region. Said support for economic growth was resultant of the region’s civic boosterism, by newspaper publishers, real-estate developers, and Hollywood moguls. The motivation for such boosterism stemmed from a “culture of expansive imagination and entrepreneurship.” Moreover, boosters had a financial stake in the growth of LA. In 1909, LA had completed two massive building projects annexing San Pedro to be a port and completing an aqueduct to supply the city with water. Judson Grenier notes that at the time, the overarching feeling was optimism fueled by the notion that, “if we can do that, we can do anything.” Thus, LA boosters were fervently set on producing an air meet which would exceed expectations and promote LA as an innovative, forward thinking metropolis. As booster support was being secured, the question remained of where to hold the United States’ first international air meet.

On the first day of the event on January 10, 1910, the effects of boosterism can be plainly seen as the front page of Hearst’s morning paper read, “World-Famous Aviators Begin Aerial Contest Today.” Such placement signaled the importance of the event to the public of Los Angeles. On the page were images from test flights showcasing a plane soaring over the Dominguez Hills field, while another capitalized on the celebrity of Curtiss with a close up of the record setting aviator behind the wheel of his airplane. Moving further down the page, the panel entitled Aviation Week Information supplies readers with details pertaining to the ten day event. Tickets for the grandstand were advertised as 50 cents a seat, with box seats being available at a charge of $30 for the 10 days. In addition to the coverage and promotion of the event, two lines under the index section note Barney Oldfield’s breaking of the five-mile world auto record. The implication of this juxtaposition suggests the shift in public interest towards aviation supplanting land speed records for those garnered among the clouds. The spectacle of aviation adopts the role of the new kid on the block cliché with the allure of progress and danger. The layout of Hearst’s paper utilizes the imagery of the event in a calculated effort to sell papers and market the paper as synonymous with aviation. As a reader, the future looked to be in the sky and the Examiner was along for the ride detailing every moment.

Los Angeles boosters, such as William Hearst, willingly supported the infancy of flight in Los Angeles with a sense of security and confidence established in the years leading up to 1910. Rath-
er than be skeptical to the point of active resistance, the aforementioned harbor and aqueduct projects bolstered confidence among LA’s boosters. Based upon the success of these endeavors, boosters, such as Hearst, felt that any investment in aviation would surely pay dividends. Such confidence coupled with the United States’ desire to promote aviation at this early stage sealed the deal for an aviation meet to occur. Looking further back in time, promotion of the aviation event in the papers began hitting the front page as early as the preceding month. Every aspect of the event made the news from judges being announced, one of which was the Mr. Bishop president of the Aero Club of America, to member of the U.S. Signal Corps Lieutenant Paul Beck’s arrival in Los Angeles to observe the event. These reports presented in the paper provide a sense of the immense interest in the meet leading up to the January 10 start date. Under the guidance of Hearst, the 1910 meet gained an important ally and advertising medium in the daily paper. Though Hearst and other boosters may have been laying the course for aviation in LA, the fervent and anticipation drummed up for aviation’s Los Angeles debut spread more so out of the sheer awe and wonder that witnessing the miracle of flight provided.

Further instrumental in the production of the air meet was the Dominguez family’s boosterism. The air meet attracted hundreds of thousands of spectators. Such high attendance not only spoke volumes for how eager Los Angeles residents were to witness aviation, for Los Angeles’ population in 1910 was only 320,000, but also presented the problem of where to accommodate such crowds. This local populous was supplemented with troves of tourists flocking to LA for the event, in order to accommodate such a crowd, a suitable site had to be secured. Landowner and member of the Dominguez family Gregorio Del Amo Gonzalez believed in the progress hosting the meet represented. The Dominguez family traced their roots back to Spanish California receiving 75,000 acres of land via a land grant from the Spanish crown. This acreage was later reduced to 25,000 acres following the U.S’s annexation of California. With land aplenty and a desire to further promote the family’s standing in LA, Gonzalez worked with meet promoter Dick Ferris to get the Dominguez Hills site, on his land, selected.

On December 23, the meet’s location was set. The hosting commission dubbed the selected site at Dominguez Hills “Aviation Park,” and in part selected the site “for the meet because of its suitability for flying conditions and its proximity to the railroad.” Proximity to rail lines served to address an overlooked problem that faced the previous 1909 Reims event. In Reims, France, “spectators had to walk some three miles from the train to the airfield.” At Dominguez Junction, the nearby Pacific Electric railcar station, a 200-foot-long platform was erected to service spectators and accommodate a railcar every two minutes. In anticipation of the crowds, workers had erected a grandstand capable of seating 26,000 people. Additionally, organizers pitched large tents for the storage and maintenance of airplanes. With the location and the stage set to inaugurate Los Angeles’ relationship with aviation, the task of luring daring, innovative, and skilled pilots remained.

Though the thrill and glory garnered by achieving flight spoke to all aviators, the potential promise of money, supplied by boosters, played a critical role in luring early aviators to Los Angeles.

As a result of boosters, the 1910 Los Angeles International Air Meet boasted substantial prize money prompting pilots not only to attempt flight, but more importantly develop aeronautical machines capable of accomplishing those arbitrary feats set by boosters and the event’s executive committee. One must recall that at such an early stage of American aviation, airplanes and dirigibles were neither commonplace nor reliable. As Grenier notes, “although 43 flying machines were officially entered, only 16 showed up, and not all of them flew.” The advertised prize amounted to a grand total of $70,000 (Approx. $2 million today). The majority of the prize money was reserved for specific aeronautical feats, “such as a $10,000 prize for a non-stop balloon flight to the Atlantic coast, which went unawarded.” Other booster supplied prizes existed for breaking major world records, many of which were also left unclaimed following the ten day exhibition. However, the combination of these lofty awards attracted some of the most skilled and daring pilots from around the world. For those pilots in attendance, the show “promised great rewards, but also grave danger, sometimes separated by only a moment.” Throughout those ten days in January 1910, Los Angeles served as the epicenter of aviation for not just the United States, but the world.

Conclusion

The 1910 Los Angeles International Aviation Meet marked the inauguration of Los Angeles’s inextricable link with the aviation industry as through the combined force of boosters, pilots and the public. Los Angeles not only hosted a successful aviation meet, but also helped to define future aviation meets with regard to how these three key groups would interact moving forward. Aviation emerged at a time when Los Angeles sought out a unique identity with the backing of boosters. Out of this need to carve out a distinct identity and the support that the Southland’s boosters supplied, Los Angeles eagerly hosted the nation’s inaugural air meet. Along with booster support for the production of the meet came prize money that attracted pilots who sought to fund their personal pursuits of achievements and in some cases grow their businesses.
This relationship between boosters and pilots set the precedent for how achievements in aviation would be both funded and accomplished. New speed, distance, and altitude accomplishments continually inspired the public as businessmen emerged as avid fans of said feats while students enthralled by airplanes were influenced by the future aviation represented. Through the combination of the boosters, pilots and public, the 1910 Los Angeles International Aviation Meet laid the foundation for the future of airplane flight in the United States as numerous other air meets built off of the LA meet’s model combining their own boosters, pilots and public in an attempt to replicate the 1910 meet’s positive effects. Through analysis of the origins, production and impact of the 1910 Los Angeles International Aviation Meet, Los Angeles’ unique blend of capital, media, celebrity, and space is shown to have critically lent itself to aviation’s growth by not only supporting, but also establishing the model for future aviation meets and booster campaigns. The culture of boosterism present in Los Angeles existed long before the 1910 meet, but through the production of the meet met newfound success aligning itself with the airplane and pilots whose accomplishments dazzled the public. To this day boosters and boosterism persist in Los Angeles as companies with LA regional offices such as Virgin Galactic, SpaceX and Northrop Grumman continue to sponsor contests and prizes with the intent to fuel innovation and drum up excitement in the same vein as those boosters in 1910 did. In this way, the processes that emerged from the 1910 meet continue to impact and govern the modern aviation industry. The 1910 meet set the stage for the region’s astronomical rise into aviation significance as the meet minted Los Angeles’ identity as an aviation paradise.

**Bibliography**


“America’s First Aviation Meet At Los Angeles” Scientific American, Vol. 102, No. 5 (January 29, 1910), pp. 105-106.


Early Exhibition flying at Reims, 1909, Photograph, Smithsonian Institute, https://airandspace.si.edu/multimedia-gallery/5843hpa.

Frenchman Arouses Enthusiasm of Crowd by Graceful Flights.” San Francisco Chronicle, Jan 11, 1910.

Large color poster, 1910, laam_85, 1910 Los Angeles International Aviation Meet Research Collection, California State University, Dominguez Hills Gerth Archives and Special Collections.


About the Author
Austin Janisch is a graduating senior with a degree in both Art and History with a distinction in the major for the completion of his senior honors thesis project. Passionate about cultivating his creativity through his art practice, Austin seeks to blend history and art to bring the contemporary period in conversation with the past and through analysis highlight those continuities that are parallel with and can inform the present. After graduating from the University of California, Santa Barbara, Austin will be pursuing his master’s in Modern and Contemporary Art: Critical and Curatorial Studies at Columbia University. Aside from his academic interest, Austin is an accomplished marathoner and ultramarathoner training to complete in a 100-mile race.
Psychological Adaptation to Climate Change: Construal Level and Coping Strategies

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Abstract
Coping can help people deal with the imminent and distant effects of climate change and encourage people to take the necessary pro-environmental behaviors. The present research examines whether use of specific coping strategies depending on construal level can significantly affect one’s pro-environmental intentions. We found that inducing a match between climate change construal and type of coping strategy significantly predicted belief in climate change, while creating a mismatched condition did not. These findings aim to illuminate the relationship between coping strategy and level of construal, and how facilitating a greater match between them may promote more successful psychological adaptation.

With the threat of climate change becoming more imminent, widespread efforts are needed to prevent irreversible damage towards the planet. Along with the ecological and physical impacts, climate change also holds significant social and psychological consequences for people, especially for groups that are at greater psychological risk. Typically, these are people with a marginalized pre-disaster existence, such as the rural and urban poor, and racial and ethnic minorities (Cutter, 2003). The psychological impacts of climate change may take form as direct, which are the acute or traumatic effects of extreme weather events and a changed environment, or indirect, which include threats to emotional wellbeing based on observation of impacts and concern or uncertainty about future risks. Psychologists can play a pivotal role by helping people target the emotional responses to these impacts, which often are higher levels of anxiety and worry, depression, grief, and apathy (Doherty et al., 2011). In order to mitigate these negative feelings, people may cope in different ways, using problem and emotion-focused coping strategies.

Coping is a crucial part of the psychological adaptation process to climate change. Some coping strategies may be maladaptive and lead to lower amounts of pro-environmental behaviors, including increased apathy or feelings of overwhelmingness. For instance, people may choose to distance themselves from the issue and perceive it as a faraway threat that is likely to affect the world in the future. In the context of climate change, coping is successful if it leads to an increase in pro-environmental behavior. For instance, talking to others about global environmental problems about how further consequences can be prevented, and how to better prepare for future events, allows people to engage with different contexts of the issue and come up with realistic solutions (Helm et al., 2008; Reser & Swim, 2011). Coping is crucial to study to further engage people in thinking about difficult environmental issues and encourage them to adopt important pro-environmental behaviors and policies.

However, before further engaging people in the issue, it needs to be agreed upon that climate change is a global, irreversible threat which needs to be addressed immediately. There tends to be a discrepancy between public attitudes and scientific findings, with many Americans tending to underestimate the severity of this issue. The impacts of climate change are often perceived by Americans as more abstract, or not personally relevant, uncertain, and psychologically distant (Gifford, 2011). This is an issue because although more affluent countries are more responsible for the effects of climate change, it is disproportionately affecting less affluent countries and communities (Islam & Winkle, 2017). The role researchers must assume is to understand how people cognitively
endeavor the imminent and distant threats of climate change. Understanding how to frame messages to be more consistent with the way people cope in constructive ways can help increase climate change engagement.

Message framing is important to garner persuasion amongst the public. In thinking of how to cultivate structural and cultural change, many politicians, educators, and policy makers, for instance, realize the importance of communicating climate change effectively. We will examine this argument more in depth through a Regulatory Fit Theory (Higgins et al., 2002) and Construal Level Theory (Trope & Liberman, 2010) perspective to coping. We will approach the issue through a combined framework of matching Construal Level Theory with coping strategies.

Coping strategies can be analyzed through a Construal Level Theory framework. Construal Level Theory describes the relationship between one’s psychological distance to an object or event and how abstractly or concretely a person thinks about it (Trope & Liberman, 2010). A concrete construal is reflective of low-level thinking where people are focused on the present in greater detail. For instance, asking a student how they can reduce their carbon footprint would require them to think about more specific, immediate details, such as reducing meat intake or biking more. An abstract construal reflects high-level thinking where the individual is concerned on the broader picture and more on the gist of the object or situation. An example of this would be asking a student why they should reduce their carbon footprint, requiring them to focus on overarching values and goals, such as thinking of future generations or wanting to preserve nature. Problem-focused coping involves taking concrete steps, such as taking direct actions towards diminishing the source of the stressor directly. This suggests that the individual has a low-level construal mindset and more psychological proximity. Likewise, emotion-focused coping involves distancing oneself from the stressor, such as regulating the negative emotions surrounding the stressor instead of the actual source. This suggests a high-level construal mindset and greater psychological distance.

Prior research that examines message fit and mindset, which studies the match between the recipient’s regulatory focus with the intended message, support this framework. For example, studies suggest that individuals who adopt emotion-focused coping mentally represent their coping at higher-level construal (Todorov et al., 2007). Han et al. (2016) demonstrated that when participants were given a coping strategy that matched the construal level of an advertisement they read, it led to a match in mindset and they were more likely to adopt the health behavior than participants in mismatched conditions. Therefore, facilitating a match between construal level and coping strategies may increase positive adaptation to climate change.

The purpose of this research is to identify a relationship between coping and Construal Level Theory and if facilitating a match between the two in the context of climate change will influence people’s beliefs and intentions. Although prior research has studied climate change under the lens of construal level and proximizing psychological distance, results have been inconsistent. Additionally, there has been little research on how coping can be maximized especially in the realm of environmental issues. We seek to provide a more nuanced perspective by exploring how proximal and distant views of climate change can both be effective for support if paired with the matching coping strategy. We hypothesize that individuals will demonstrate higher pro-environmental intentions when they utilize a coping strategy that is congruent with the construal level of a message because they will have a “fit” in mindset.

**Method**

**Participants & Design**

We recruited a convenient sample of American adults (N = 310) on Amazon’s MTurk, which was then reduced to 293 after eliminating 17 participants who did not consent or did not write in a response for the coping condition. Participants were given $1.50 for participating in this study. Participants were assigned to a 2 (construal level of climate change) x 2 (coping strategy) between-subjects experimental design with two independent variables and four dependent variables. In total, there were four different experimental conditions (concrete and problem-focused, concrete and emotion-focused, abstract and problem-focused, and abstract and emotion-focused) and participants were randomly assigned to one.
Materials
Independent Variables

Climate change construal. For the first manipulation in this study, we used images from Duan et al.’s (2019) study, which was found on various websites. We chose these images to replicate the similar effect of inducing participants into a more concrete or abstract mindset regarding climate change. Participants were told that they would view a total of nine images. They were shown one image at a time, with the next button appearing at the bottom of the page after twenty seconds, to ensure that they do not skip through the images. The concrete condition contained colored photographs that focused on specific individuals and places and emphasized the consequences of climate change. The concrete condition was intended to bring the issue of climate change psychologically closer to the participant by depicting natural disasters and their effects to people and the communities, as also depicted in the captions. The abstract condition contained black and white pictures that depicted graphs and maps and focused on the causes of climate change.

Figure 1
Example items from the climate change construal. Concrete (left), Abstract (right).

Coping strategy. This manipulation was inspired by the coping strategy manipulation in Han et al.’s (2016) study, which was based off Miller (2008). However, we included sub-strategies to help prevent people from using maladaptive emotion-focused coping strategies, and to try to keep the strategies parallel to each other, reducing noise. The sub-strategies were chosen based on prior research regarding how people cope with environmental issues and climate change, and if they were more beneficial for increasing pro-environmental attitudes and behaviors. Participants were told that either problem- or emotion-focused coping was found by psychologists in North America to be the most beneficial when thinking about climate change. They were given three sub-strategies of how the main strategy could be used and were asked to list three ways they could apply it towards thinking about climate change.

Table 2
Coping strategies and the sub-strategies

<table>
<thead>
<tr>
<th>Problem-Focused</th>
<th>Emotion-Focused</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gathering information about the situation, urging others to do what they can help.</td>
<td>Seeking emotional social support –</td>
</tr>
<tr>
<td>Planning –</td>
<td>Reappraising the situation –</td>
</tr>
<tr>
<td>Thinking about and becoming prepared</td>
<td>Thinking of the negative situation in a more positive light</td>
</tr>
<tr>
<td>Direct actions –</td>
<td>Acceptance of the situation –</td>
</tr>
<tr>
<td>Informing others of what they need to do, providing instrumental/emotional support, specific actions.</td>
<td>Acknowledging problem exists rather than denying it</td>
</tr>
</tbody>
</table>

Dependent Variables

Climate Change Belief scale. We had participants complete the Belief in Global Climate Change scale (12 items, α = .94), adopted from Heath & Gifford (2006), which assesses the extent to which people believe global climate change is occurring, and is caused by human activity. They were asked to indicate how much they agreed with each statement using a 7-point Likert scale (e.g., “How likely do you think that global warming is occurring now?”), ranging from 1 = Strongly Disagree to 7 = Strongly Agree, where higher scores indicate a higher level of belief in human caused climate change.

Climate policy support scale. Participants completed the Support for Climate Policy scale (7 items, α = .81), adopted from Ding et al. (2011). The scale asks participants how much they support or oppose a number of environmental policies proposed in the United States (e.g., “Requiring electric utilities to produce at least 20% of their electricity from renewable sources”), ranging from 1 = Strongly Oppose to 7 = Strongly Support.

Pro-Environmental Behavioral Intentions scale. Participants responded to the Pro-Environmental Behavioral Intentions scale (6 items, α = .77), which uses Eom’s modification of Zaval et al. (2015). The scale asks participants to indicate how often they intend to perform the following behaviors (e.g., “Use public transportation or carpool”), on a 6-point Likert-scale, ranging from 1 = Never to 6 = All the time.

General Confidence in Society scale. Participants responded to the General Confidence Scale (6 items, α = .75), adopted from
Keller et al (2016). The scale asks participants to respond to various statements regarding society’s ability to mitigate large threats (e.g., “Our society is well equipped to solve future problems”), on a 7-point Likert scale, ranging from 1 = Highly Disagree to 7 = Highly Agree.

Procedure
After participants provided their informed consent, we randomly assigned participants to either a concrete or abstract depiction of climate change. Then, after receiving the climate change construal condition, participants were randomly assigned to a coping strategy condition. After they completed this, participants filled out four different scales for climate change belief, climate policy support, pro-environmental behavioral intentions, and general confidence in society. Participants then filled out a demographic questionnaire including gender, age, ethnicity/race, education, subjective socioeconomic status, and political identification. Finally, participants were debriefed about the true nature of the study and were asked to complete a secondary consent form which allowed them to withdraw their data from analyses if they wished.

Results

Table 3
Relationships between dependent variables

<table>
<thead>
<tr>
<th>Climate Change Belief</th>
<th>Climate Policy Support</th>
<th>Pro-Environmental Behavioral Intentions</th>
<th>General Confidence in Society</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate Change Belief</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climate Policy Support</td>
<td>.720**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pro-Environmental Behavioral Intentions</td>
<td>.315**</td>
<td></td>
<td>.049**</td>
</tr>
<tr>
<td>General Confidence in Society</td>
<td>- .456**</td>
<td></td>
<td>.245**</td>
</tr>
</tbody>
</table>

Table 3. The correlation coefficients between dependent variables. "**p < .05, "*p < .01 (two-tailed test).

First, we looked at the bivariate relationships between key variables (see in Table 1). All key dependent variables, except for general confidence in society and pro-environmental behavioral intentions, were positively correlated to each other. We conducted a 2 (climate change construal) x 2 (coping strategy) ANOVA for each of the following dependent variables. There were no statistically significant findings for pro-environmental behavioral intentions or general confidence in society.

Climate Change Belief

There was no significant main effect of climate change construal, F(1, 289) = .062, p = .804. Participants who received the concrete construal condition (M = 5.230, SD = .092) had very similar scores to those who received the abstract construal condition (M = 5.197, SD = .095). In other words, the portrayal of climate change as either more concrete or abstract did not affect people’s overall belief in climate change.

There was no significant main effect of coping condition, F(1, 289) = .093, p = .761. Participants who received the problem-focused condition (M = 5.193, SD = .095) had similar scores to those who received the emotion-focused condition (M = 5.233, SD = .091). That is to say, the type of coping strategy people applied to climate change, either problem- or emotion-focused, did not affect their belief in climate change.

We wanted to explore if a match between our independent variables predicted for belief in climate change. There was a statistically significant interaction between the effects of climate change construal and coping strategy on belief in climate change, F(1, 289) = 10.599, p = .001. For those who received the concrete images of climate change, problem-focused coping led to greater belief in climate change (M = 5.428, SD = .139) than emotion-focused (M = 4.958, SD = .130). For those who received the abstract images, emotion-focused coping (M = 5.436, SD = .138) led to stronger belief than problem-focused coping (M = 5.031, SD = .120). In other words, when participants received the concrete condition and gave examples of problem-focused coping strategies, as well as those who received the abstract condition and gave examples of emotion-focused coping strategies, they also showed greater belief that climate change is caused by human activities and is happening now, compared to other groups. This finding was congruent with our hypothesis.

Figure 2

Matching Climate Change Construal to Coping Strategy Increases Climate Change Belief

![Belief in Climate Change](image)
Climate Policy Support

There was no significant main effect of climate change construal, \( F(1, 289) = .000, p = .998 \). Participants who received the concrete construal condition (\( M = 3.941, SD = .058 \)) had similar scores to those who received the abstract construal condition (\( M = 3.941, SD = .061 \)). This means that no matter how climate change was portrayed, as either more concrete or abstract, it did not affect participants’ support for climate policy.

There was no significant main effect of coping condition, \( F(1, 289) = .078, p = .780 \). Participants who received the problem-focused condition (\( M = 3.929, SD = .061 \)) had similar scores to those who received the emotion-focused condition (\( M = 3.952, SD = .058 \)). In other words, the certain type of coping strategy people applied to climate change did not affect their support towards various climate policies.

There was a marginally significant interaction between the effects of climate change construal and coping strategy on support for climate policy, \( F(1, 289) = 3.231, p = .073 \). For those who received the concrete images of climate change, problem-focused coping led to greater support for climate policy (\( M = 4.028 \)) than emotion-focused coping (\( M = 3.853 \)). For those who received abstract images, emotion-focused coping (\( M = 4.004 \)) led to stronger support than problem-focused coping. Problem-focused coping (\( M = 3.877 \)). In other terms, when participants received the concrete condition and gave examples of problem-focused coping strategies, as well as those who received the abstract condition and gave examples of emotion-focused coping strategies, they also showed greater support for proposed climate policies, compared to other groups. This finding was congruent with our hypothesis.

Discussion

The current study sought to discover how altering the construal of climate change and strategically combining that with coping strategies can lead to an increase in message fit and overall support in pro-environmental intentions regarding climate change. Based on prior research on this topic, we hypothesized individuals who were induced into a match between construal level and coping strategy conditions would show higher pro-environmental intentions and beliefs, than individuals not in matched conditions.

We found that participants in matched groups: concrete construal and problem-focused, as well as abstract construal and emotion-focused, showed higher belief in climate change than participants in mismatched groups. Additionally, we found that those in matched groups also demonstrated a slightly higher support for climate policy. We speculate that these results are due to participants feeling more of a match in their mindsets, with belief being easier to change and policy having more nuance. There were no significant findings for pro-environmental behavioral intentions and general confidence in society. This may be because individual behaviors may be more difficult to connect with the overarching goal of mitigating climate change. Additionally, general confidence in society was positively related with higher income. Typically, individuals from higher socioeconomic status are more removed from the consequences of climate change.

Implications

The current study sheds light on the further possibilities of using construal level and coping strategies to increase message fit. This research may be crucial for communicating scientific findings through media. Duan et al. (2017) examined many popular U.S. Newspapers and found that climate change was generally construed as concrete, however, more conservative newspapers would describe the topic as more abstract through inducing skepticism and portraying it as a future problem. Understanding how different groups may view climate change based on the media they are most exposed to is the first step towards implementing the most effective action to bring about change. Different coping strategies can help engage people further into the issue and have them draw on important values and enforce their self-efficacy in being able to act. Follow up actions to messages need to be consistent with the expectations people are experiencing, as prior research has demonstrated to get the best mindset-message fit and higher willingness to partake in new behaviors.
Limitations and Future Directions

A main limitation of the study was that we lacked a representative sample, as participants were conveniently recruited from MTurk. Therefore, findings cannot be generalized to the U.S. adult population. Having a more representative sample would allow researchers to understand the nuances between different groups, as prior research has found that there are culture-specific predictors for environmental action (Eom et al., 2016). Another limitation was that we were unable to know if the independent variable for climate change construal achieved its purpose. In the future, including a manipulation check such as the behavioral identification form, would allow researchers to know if participants’ mindsets are reflective of more low-level or high-level thinking.

Conclusion

This research provides a social psychological perspective to the crucial issue of climate change. In this study, we sought to highlight how climate change is a tricky topic to present to the public due to its complexity of being both a proximal and distal threat. Additionally, coping, while important as a mediator for environmental behaviors, may be counterintuitive if applied in the wrong context. We found evidence that showed how construal level and coping strategies can be effectively combined to increase belief and support for policy, suggesting that regulatory fit can be induced through different frameworks. These findings are similar to research by Han et al (2016) and furthers their research by applying the framework towards the realm of environmental issues. Overall, this research contributes to literature on message fit and its role in promoting psychological adaptation to climate change.

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References


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Emily La is a graduating senior Psychological and Brain Sciences and Environmental Studies double major with departmental honors for the completion of her honors thesis project. She is pursuing her Ph.D. in Communication at Cornell University in the fall. She is excited to continue her research in the realm of climate change communication. Apart from research, she is incredibly grateful for her experiences working as a student assistant at the Food Bank and as a mentor for the Undergraduate Mentorship Program.
Environmentally-Fueled Violence in Honduras: The Case Studies of Berta Cáceres and the Indigenous Tolupan People
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Abstract
Honduras has endured a long history of environmental problems that are fueled by pressure from international bodies to increase economically-fueled activities that result in extreme land degradation. Logging, dam building, mining, and deforestation operations have all been met with extensive protests by indigenous groups, coalitions and movements. In response, interests supporting the continued exploitation of resources have subjected these groups to extreme and systematic violence in the hopes of silencing them. How successful is this use of terror to coerce violence? This paper reviews two case studies of violence in Honduras: the murder of internationally-recognized activist Berta Cáceres, and the violence perpetrated against the Tolupan people.

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Honduras has experienced a long history of environmental problems fueled by pressure from international bodies to increase economically-fueled activities that result in extreme land degradation. Such activities include logging, dam building, mining, and deforestation to clear land for agriculture. The results of these activities have caused extreme levels of pollution and soil erosion, primarily on indigenous land.

To combat the spread of this land degradation, indigenous groups have formed coalitions and protest movements to try and slow the deterioration of their land at the hands of both the Honduran government and international actors who fund these activities. In turn, these powerful bodies have murdered hundreds of activists in an attempt to silence these protests, leading to Honduran government and international actors who fund these activities. In turn, these powerful bodies have murdered hundreds of activists in an attempt to silence these protests, leading to Honduran government and international actors who fund these activities. In turn, these powerful bodies have murdered hundreds of activists in an attempt to silence these protests, leading to Honduran government and international actors who fund these activities. 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This paper will review two instances of violence against environmentalists. The first is an environmental activist and indigenous leader, Berta Cáceres, who made international headlines after her assassination in 2016. In 2015, Cáceres won the Goldman Environmental Prize for her grassroots campaign that successfully stopped one of the world’s largest dam builders from building a dam on a river in western Honduras. The second involves the indigenous Tolupan people, who, for nearly a decade, have fought against the logging-fueled deforestation of their ancestral land. Both the Honduran government and the companies involved in the logging have resorted to threats, charging activists with crimes of obstruction, starting fires on their land, and the systematic murders of outspoken Tolupan leaders. These two instances demonstrate the use of terror as a tool to coerce silence, as well as showcase how this type of systematic violence can either suppress knowledge or draw attention to the widespread use of violence against groups and individuals fighting for the preservation of their homes.

The increase of instances of violence against indigenous people and environmental activists can be traced to the 2009 Honduran coup d’État when the Honduran army at the direction of the Honduran Supreme Court ousted President Manuel Zelaya after he attempted to hold a referendum to rewrite the country’s constitution (Rosenberg 2009). With the democratically-elected president deposed, Honduras descended into unrest that continues today. It was after 2009 that Honduras saw a huge influx of third-party actors. Subsequently, these megaprojects are approved with little care given for the impact on indigenous communities, a trend which echoed throughout Central America. Projects such as these also influenced the increased militarization of these countries, as protection for project sites became an industry in itself (Conant 2015). This, in turn, caused an increase in threats, violence, and other intimidation tactics used against indigenous activists and environmentalists.

Berta Cáceres was born into the Lenca people in southwest Honduras. In 1993, she co-founded the Council of Popular and Indigenous Organizations of Honduras (COPINH), an organization through which she led campaigns on issues from illegal logging to the presence of US soldiers on Lenca land (Watts 2015). Though she launched many campaigns, one in particular, garnered international attention and was named after her assassination in 2016. In 2006, she discovered that a Honduran company, Desarrollos Energéticos Sociedad Anónima (DESA), in partnership with the Chinese company Sinohydro and the World Bank’s International Finance Corporation planned to build a series of hydroelectric dams on the Gualcarque River (Shoichet, Griffiths, and Flournoy 2016). The local Lenca people had not been consulted, violating international law, and the Agua Zarca Hydroelectric Project would have disrupted access to water, food, and medicine, and therefore their traditional way of life. Beginning in 2013, Cáceres led COPINH and the local indigenous community on a year-long protest against the dam at the construction site. Throughout the protest, activists were routinely threatened and harassed by company employees and security, and on July 15, 2013, the Honduran military opened fire on the protesters, killing one and injuring three others (SOAW 2016). Following this episode, Sinohydro and the International Finance Corporation withdrew from the project, but violence against COPINH members who were associated with the protest continued, and in May 2014, two more members were murdered.

This protest earned Cáceres the 2015 Goldman Environmental Prize for Central and South America and shifted her from a national figure into an international emblem for environmental and Indigenous activism. Though this was just one project that she mobilized against, the ability of small, grassroots organizations to halt for mining, which in turn creates a demand for cheap energy to power mining operations (Conant 2015). To meet this need, the Honduran government began approving hundreds of dam projects, including the Agua Zarca Hydroelectric Dam, the project that Berta Cáceres became internationally acclaimed for protesting (Conant 2015). Projects that further mining operations do little for the citizens of Honduras, instead they greatly benefit overseas mining companies, who, in turn, provide incentives for government officials. Subsequently, these megaprojects are approved with little care given for the impact on indigenous communities, a trend which echoed throughout Central America. Projects such as these also influenced the increased militarization of these countries, as protection for project sites became an industry in itself (Conant 2015). This, in turn, caused an increase in threats, violence, and other intimidation tactics used against indigenous activists and environmentalists.
the economic and political powers of globally-reaching corporations built Cáceres an international legacy and caused several other projects to be halted as international powers withdrew funding and support from similar logging and dam-building endeavors (Goldman Environmental Foundation 2015).

On the night of March 2, 2016, Cáceres was shot dead in her home by armed intruders. Prior to this, the Inter-American Commission on Human Rights (IACHR) had recommended precautionary measures be taken by the Honduran government, due to an increasing number of threats received by Cáceres after both the success of the dam protest and the international attention environmentalists in Honduras were getting after Cáceres traveled to the US to receive her prize. However, on the day of her death, she was not under protection (GAIPE 2017). COPINH and her family requested an independent investigation into the matters of her death, but the request was ultimately ignored. After this, the Grupo Asesor Internacional de Personas Expertas, or GAIPE, launched an investigation. They discovered that her murder was not an isolated incident, but rather one part of a strategy carried out by DESA, public officials, and State security agencies to “control, neutralize, and eliminate any opposition” (GAIPE 2017). The investigation also revealed that DESA severely lacked funds to complete the Agua Zarca Hydroelectric Project and had used funds originating from the Honduran financial system to not only maintain the project but to “systematically attack members of COPINH and Berta Isabel Cáceres Flores, among others” (GAIPE 2017). Not only does this analysis establish willful negligence by financial institutions, but it also reveals a widespread prior knowledge to the strategies undertaken not only by DESA and to implement measures to guarantee respect for the human rights of indigenous communities and individual activists (GAIPE 2017). With respect to the specifics of Berta Cáceres’ case, GAIPE found that the “planning, execution, and cover-up” of the murder began in November 2015, and many excuses have been fabricated since the murder occurred, including tales of crimes of passion or internal conflict with another member of COPINH (GAIPE 2017).

Despite these attempts to cover-up the truth of her murder, Cáceres’ death received global recognition and continued awareness for the struggles of indigenous people in Honduras. The event also sparked questions of international influence in Honduras, as the US-funded police force was heavily involved in the threats issued to her and other members of COPINH in the months prior to her death (Watts 2015). This recognition also gained momentum because of a new report that cited Honduras as the most dangerous place in the world for environmentalists, which had coincided with Cáceres winning the Goldman award in 2015 (Watts 2015). Another layer to the international complexity of this case lies in the training of the soldiers who are involved in the deaths of indigenous activists. Many of them, including the soldier who killed the activist at the dam protest in 2013, were trained at the US School of the Americas (Watts 2015). And though other forms of criminal activity are high in Honduras, the violence against environmentalists and Indigenous peoples reflects a power imbalance that dates back centuries, to an imperialist mindset that has merely evolved into the capitalist-fueled projects decimating sacred indigenous land. The power in these projects lies not only in a governmental unwillingness to intervene but also with yet another layer of complex power imbalance, as many of these corporate-capitalist entities have private security forces that far outnumber Honduran police and military bodies (Watts 2015). The assassination of Berta Cáceres exposed merely a few threads of the web of corruption that has plagued Honduras for over a decade.

While Berta Cáceres is emblematic of a wider campaign of violence against environmentalists, the case of the Tolupan people demonstrates the systematic use of violence to intimidate activists and suppress Indigenous voices. The Tolupan territory is home to vast amounts of natural resources, but it is the pine forest on their land that has been the cause of extreme levels of tension and violence. Specifically, companies target the Tolupan reserve of Montana de La Flor, where the community still practices traditional lifestyles through agriculture and the use of resources found in the pine forests surrounding the area (Encyclopedia Britannica 1998). Land degradation caused by unethical timber practices results not only in the degradation of forests, but the pollution of water and land, resulting not only in the disruption of current practices but the erasure of hundreds of years of cultural history as well. Since 2009, private timber companies have moved into the region and have set about suppressing the indigenous activists who are trying to protect their ancestral land. Measures such as the criminalization of protesting have resulted in the arrest of many indigenous people, though it is only one tool in the drawn-out strategy of removing the obstacle of the Tolupan people (Krausch 2019). One entity that has been the most active in this region is INMARE, a private timber company owned by businessman Wilder Dominguez (AWARE Simcoe 2019). Though there are measures in place to protect indigenous land, INMARE never carried out the proper consultations with the Tolupan people, and the Honduran government allowed them to continue with the project. The company seeks to harvest more than 16,000 cubic meters of wood from the Tolupan territory (AWARE Simcoe 2019). As of October 2019, INMARE, with the help of the Honduran government, was prosecuting nine indigenous
people for their participation in various protest activities (Krausch 2019).

Along with the criminalization of protests, another strategy used by timber companies is to burn large swaths of forest in the Nombre de Dios mountain range, the southern side of which includes Montaña de La Flor, a Tolupan community (Krausch 2019). However, the identity of who exactly is setting these fires has not yet been discovered (Krausch 2019). In April of 2019, the smoke was so intense that it forced a group of international witnesses from the Witness for Peace Solidarity Collective to retreat after a single afternoon, with many ill due to the smoke (Krausch 2019). The respiratory afflications that the community now suffers from acts as another deterrent to the pursuit of further protests.

The biggest tool in the repertoire of logging companies is the systematic threats made against indigenous activists, and the murders of both the activists themselves and their families. Of the nine indigenous people who were facing criminal charges, two have had a family member murdered since October of 2019 (Krausch 2019). These are the most recent in a long list of environmental murders stretching back to 2010, nine of which have occurred since 2013 over logging (Phillips 2015). Despite the ability of the community to identify the individuals who carried out these murders, no arrests have been made, and there has been little done by the Honduran government to prevent similar incidents from happening in the future. Like Berta Cáceres, several of these activists had been identified by IACHR as needing additional protection, though none was provided.

Of the many Tolupan people who have been murdered or gone missing, the case of Milgen Idán Soto Ávila demonstrates the pattern of threats and violence that has followed the Tolupan people. On September 27, 2019, twenty-nine-year-old Milgen was killed on his way back to the protest camp, where he had been staying to raise awareness about the murders of two of his family members, José Salomón Matute and Juan Samael Matute (AWARE Simcoe 2019). The two men had died of gunshot wounds a few months previous, on February 25, 2019. They, too, had been beneficiaries of IACHR precautionary measures, after they had been subjected to threats and violence in the context of their work (Rivero 2019). An investigation has been launched, but little effort has been made to seriously address the incident or its perpetrators. The subsequent murder of Milgen returned national attention to the plight of the Tolupan people, as well as demonstrated the trend of family members of murdered individuals receiving threats and often having to relocate. When the implications of where Milgen was found are considered, it is only more evidence that points toward timber companies. His body was on the land INMARE had just been pillaging (MADJ 2019, AWARE Simcoe 2019).

The murders of these three men are just a small example of the widespread violence experienced by Indigenous groups across Honduras, which is not just confined to the struggles of the Tolupan and Lenca people. The struggle against the ideologies of development at the expense of traditional ways of life continues to plague Honduras, as activist groups battle international powers that are built on a foundation of these ideals. The violations of human rights and the lack of dignity offered to these groups echo throughout international activist communities, but the struggles of indigenous people are not often seriously considered in international policy developments. The murder of Berta Cáceres is an anomaly in that it garnered international attention on the tails of the recognition she had gained through her activism. Her death also resulted in arrests made due to international pressure and a global call for justice, but this instance in no way demonstrates how the majority of these cases are handled. In the murders of José Salomón Matute, Juan Samael Matute, and Milgen Idán Soto Ávila, no arrests have been made.

In many ways, the violence against these groups has succeeded in silencing protests against logging and hydroelectric companies. This is due in part to the cooperation of the Honduran government for economic gain. Between 2009 and 2017, there have been 123 known murders carried out on individuals protecting their land (Gallon and Sandoval 2017).* This number does not include missing individuals, the reports of which are not advertised by the Honduran government, and are difficult for third-party interveners to keep track of. Persons who have gone missing as a result of environmental action are also difficult to track due to the interwoven nature of environmental violence with economic interests and political intervention (Gallon and Sandoval 2017). Much of the violence against activists is fueled by US interests, as the US is Honduras’ main trading partner (Gallon and Sandoval 2017). Questions of culpability heavily surround the relationship between Honduras and global hegemonies. Even as the US Embassy pledged $2.9 million to an organization that helps protect human rights defenders, US-trained soldiers and US-backed companies continue to commit atrocious human rights violations and create a culture of terror in indigenous communities. While justice for the activists who have been killed—many of whom were targeted at home surrounded by their families—is a consistent goal, general global awareness of the continuous struggles of Tolupan and Lenca people could increase pressure to protect the dignity of these groups and their ancestral land.
“My research for this paper revealed the following names. These are the individuals who have been murdered protecting their land since 2009, in relation to these two cases alone: Berta Cáceres, Tomas Garcia, William Rodriguez, Irene Meza, Nelson Garcia, Armando Fumez Medina, Maria Enriquez Matute, Ricardo Soto Fumez, Francisco Martinez Marquez, Juan Samuel Matute, Jose Salomón Matute, Milgen Idan Soto Avila, Aldolfo Redondo, Luis de los Reges Marcia, Eracimo Vieda Ponce, Fermia Romero, Jose de los Santos Sevilla.

References


menlatinamericano.org/2014/05/27/honduras-asesinato-y-represion-en-san-francisco-de-opalaca-y-rio-blanco/


Orellana, X. (2016, March 6). Berta Cáceres, un icono étnico que voz a los indígenas. La Prensa. Retrieved from https://www.laprensa.hn/honduras/936219-410/berta-c%C3%A1ceres-un-%C3%ADcono-%C3%A9tnico-que-les-dio-voz-a-los-ind%C3%ADgenas


About the Author

Hannah Lahey is a senior at UC Santa Barbara, majoring in English, French, and Global Studies. She is passionate about researching and writing about the intersectional effects of globalization and environmentalism on local and regional scales, hoping that her work can foster a more profound understanding of the Global South. She currently conducts research within the English department and is the Editor-in-chief of UCSB’s multilingual literary journal. After her graduation in the spring of 2020 she hopes to pursue a graduate degree in Global Studies after working for an environmentally-focused non-profit for one year.
Marginalized Students within California’s Public-School System: experiences of Mexican Indígena youth

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Abstract
California’s Indígena population (indigenous people who identify with origin communities in Mesoamerica) has grown over the last 70 years, especially during the 1990s. Simultaneously, the number of youth that have enrolled in the public-school system has increased. However, these youth are often not welcomed and instead experience racial microaggressions within schools that alienate and encourage them to assimilate while abandoning their culture. I will explore the history of displacement of Indígena youth and their interactions in schools. I will discuss a selection of Indígena youth experiences in the education system, while critically analyzing the implicit biases of those around them.

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Introduction
School legislators often do not take the necessary steps to create a safe and welcoming school culture where all students’ backgrounds are properly recognized. This is especially the case for Mexican Indigenous youth that attend California schools, for whom resources and support services are not easily accessible, leading to an imbalance in educational opportunity, and social capital. Their experiences are often tucked away behind those of Chicano/Mestizx students. Further, the marginalization and discrimination that Indigenous youth experience at the hands of students and school administrators is vividly present in the telling of their everyday experiences, which can hinder their educational and personal development. While community-based initiatives have helped empower youth through self-advocacy, much more work is needed. This article surveys the complex issues involved and argues that it is important to hear the testimony of Mexican indigenous youth to be able to better serve their needs within the school system.

Through this essay, I want to honor the testimonies of the individuals who shared their experiences for us to hear and reflect upon. I recognize my privilege as a Mestiza and do not want to intrude or overstep into indigenous communities. Through this essay, my goal is to try to bring awareness and be an ally to indigenous peoples. I will extensively look at testimonios shared with researchers to drive my analysis of recurring themes of a broken system that does not benefit students. Through this essay, I will draw parallels between the different testimonios and my own observations on my experiences as a student at Oakland Senior High School.

Terminology
Before we begin, it is important that we define terms that will be used throughout this essay: Indigenous, Mestizx, Chicanx, and Indígena. Mestizx communities are peoples that have a mixed heritage, often of Indigenous and European descent. Further, Chicanx populations find their roots between Mexico and the United States. Since many people from Mexico do not speak Spanish, in addition, schools simply label Indígena students as Latinx, a term that erases class and race, thus removing Indígena identity. Schools are where youth spend much of their day experiences, which can hinder their educational and personal development. While community-based initiatives have helped empower youth through self-advocacy, much more work is needed.

Even though these labels have been defined, it is important to note that labeling people is reductionist and imperfect, as identities are intersectional. Therefore, it is crucial to privilege how people choose to identify.

Background
In order to understand the way of Mexican Indígena communities, we first have to understand the history that has brought them to their current location. Indigenous culture and language are marginalized within a perceived homogenous culture of Spanish-speaking México, a country with strong anti-indigenous sentiments in its society. These sentiments are not only present today but can be traced back in history. “In the mid-nineteenth century the indigenous communities became the target of liberal reforms that sought to modernize them out of existence by incorporating them into the young and modernizing Mexican nation-state” (Kearney 2000: 178). The underlying attempt by liberals to “modernize” Indigenous folk and have them join the homogenous Mexican culture while leaving their own culture behind resulted in an increase in the marginalization they experienced. These ideologies are best demonstrated with the word Indio, a derogatory word with connotations of being “dirty”, “dumb”, or “stupid” (Kearney 2000).

Further, lack of resources, deforestation, and soil erosion has been forcing members of indigenous communities to leave their home communities and migrate. It started in the 1940s with the Bracero Program, increasing steadily, and drastically in the 1990s, the United States became a common destination for Indigenous Mexican migrants. The increase in migration to the United States was reflected in the population jump of Mixtec farmworkers in the state of California to 5-7% of the total agricultural labor force (Rivera-Salgado 1999).

Welcoming and Unwelcoming attitudes
Mislabeling and its effect on Indígena identity
Indígena students that attend public schools in the United States are often misidentified by schools and labeled as Spanish heritage speakers because of assumptions based on their country of origin (Machado Casas 2012). However, Mexico is home to hundreds of diverse Indigenous languages, and many people from Mexico do not speak Spanish. In addition, schools simply label Indígena students as Latinx, a term that erases class and race, thus removing Indígena identity. Schools are where youth spend much of their
developmental years and where their identities are shaped as a result of social experiences and challenges. Therefore, it is vital for schools to acknowledge and properly identify students’ cultural identities. Generalization of student identities showcases the schools’ lack of proper understanding of the complex histories of their students.

Labeling students as Spanish heritage speakers causes problems for them because when they are placed in English Student Learner classrooms, their indigenous languages are not acknowledged. They are often addressed in Spanish, a language they may not speak, as described by a young Mixtec man, “When they talked to me, I didn’t respond because even though I understood a little Spanish I couldn’t speak it. When I didn’t respond they thought I was mute and that I didn’t know anything. Eventually they realized I didn’t speak Spanish when they asked me and I said, ‘No, only Mixteco.’ Then they asked, ‘Mixteco, what is that?’ I didn’t know what to say” (Perez, Vasquez, Buriel 2016: 259).

The misconception and expectation that Indígena youth must speak Spanish places youth in situations in which they have to explain their culture to others. This is not a responsibility that should fall on them. By asking “what is that?”, individuals look at indigenous languages as unworthy of being acknowledged or named. A prominent example of delegitimizing indigenous languages is by calling them dialectos. However, this young man’s experience is not an isolated example, and it is a common theme in the testimony of Indígena youth.

Many students report strongly relating to blatant discriminatory practices experienced by others, even if they have not lived it themselves. For example, perhaps not all Indígena students have experienced being asked to explain their language and culture, but they identify with the sentiments of alienation and seclusion. The visceral connection to discriminatory experiences of other students, based on language usage and different cultural traditions, demonstrates how powerful and meaningful Indígena identity is for students (Barrillas-Chón 2010). Thus, the shared experiences of discrimination and marginalization may create a sense of strong Indígena identity, pride, and solidarity amongst students. Such cultural solidarity makes it crucial for schools to recognize students’ complex backgrounds.

Student attitudes toward physical spaces

The physical location of English Student Learner (ESL) classrooms impacts students as it reinforces the divisions found within the school campus more broadly. ESL classes are usually located on the outskirts of campuses, physically separating student populations. Hence, preventing exposure and interaction of Indígena students with others. Overall, perpetuating strong biases and stereotypes that hinder Indígena youth from being welcomed in common areas. In one case, the lack of Indígena student involvement with the rest of the student population was visible in the school’s lunch cafeteria. There, English Student Learners would sit on the outside tables while English-speaking white students sat in the center. By sitting on the outside students were looked down upon by school administrators, who spent most of their time with English-speaking students (Gilllin, Buendia, Croslan, and Doumbia 2003). The lack of staff involvement with students reinforces present unwelcoming attitudes. Generally, the lack of integration into mainstream school culture negatively affects Indígena students because they do not gain the same social capital as others.

Ironically, Indígena students may at times see this physical separation as a welcoming practice by school administration as they are given what feels like a safe space. In this way, they believe the school provides them a place in which they can create a space for themselves (Perez, Vasquez, Buriel 2016). Students carry out this practice outside provided spaces, and locate teachers they can communicate and relate to, expanding their allies (Perez, Vasquez, Buriel 2016). Even though students perceive these efforts as welcoming, the underlying message of separation is prominent in schoolwide culture.

My own experiences during high school in Oakland, California, reflect similar patterns. During the summer of 2014, Oakland High School enrolled many English language learners and unaccompanied minors only after other schools intended for newcomers in the district were fully enrolled. Oakland High was not prepared with the proper curriculum or physical space to take in this population of students. Thus, the new students took it into their own hands to create safe spaces for themselves after the school did little to welcome them. One of these spaces was the corner towards the back of our senior court, used for activities to promote school spirit such as homecoming. As English-speakers, we sat near the front or middle of the court to better participate in activities. In contrast, English learners and Indígena students’ presence was not acknowledged as they did not participate. They were effectively excluded...
from events because of the language barrier in programming. Neither students nor administration took the time to bridge the accessibility gap to create a welcoming space for all students.

Further, the stark alienation of Indígena students was present within student-run clubs. During the 2014-15 school year, multiple groups of students would gather in a classroom during lunch to meet as part of Latinos Unidos. However, even though the group was meant to raise awareness and unity within the Latinx community, there was a sharp division between Mestizx and Indígena students. There was little to no communication between student groups even though they were present in the same room. The teacher adviser for the group tried multiple ways to bridge this divide, such as pairing students with each other, but they were not successful. Everyone kept to themselves, and in multiple occasions, you would hear the derogatory term dialecto in the room. Overall, within the testimonios of students and my experiences during my time at Oakland High, reoccurring themes of alienation and prejudices have come forth.

School’s Support Programs

The lack of representation and resources targeted for Indígena students is a common issue within school campuses. The belief that schools are providing uniform resources and program funding for all students is prevalent among school administrators (Barillas-Chón 2010). However, this color-blind approach to student needs only exacerbates Indígena youth’s disadvantages since it does not focus on their specific needs. The little attention paid to special needs leads to the underfunding of classroom resources that are needed for appropriate inclusivity. For example, many English Student Learner classes often contain more than 30 students that speak up to 12 different languages (Barillas-Chón 2010), as can be seen through Valentina’s anecdote, a 6th grader in Linda Vista, California:

“Nos pusieron allí con otros estudiantes que no hablaban muy bien el inglés...tampoco. Era vietnamitas, hmongs, laos y nos-, mexica-

nos y nosotras. Pues, nos ponen, era ESL y nos ponen todos juntos todos allí sin poder comunicarnos tratando de aprender inglés. El mexicano no podía comunicarse con el de hmong. El de hmong tampoco con nosotros... luego ya sabemos algunas palabras en inglés. Entonces ya fuimos aprendiendo (Kovats 2010; 36).”

There is so little institutional support for teachers in English student learner classrooms that students can detect it. Students are conscious of the disadvantages they face due to strained communication with peers and scarcity of school involvement to improve classroom services.

Negative Stereotypes and Abuse

Indígena youth are mocked for their lack of access to Spanish since they are expected to be heritage speakers. They are belittled and treated as lacking comprehension by mestizxs as they do not meet mestizx’s expectations of Spanish fluency (Barillas-Chón 2010). This was the case for Paulina, a young mixtec adult who recalls her middle school experience, her testimony demonstrates constant bullying.

“Entonces, en la escuela nos hacian burlas porque no habíabam-nos bien el español. Me acuerdo que yo decía “la mapa” y declaran “no es la mapa es el mapa”. Entonces me pusieron de apodo “la mapa.” Entonces en ese momento te avergüenzas de ser, no sé, por la culpa de ser mixteco, hablar mixteco, no aprendes bien el otro idioma. Entonces, como que te da pena y dices pues no, no somos mi-teco. (Kovats 2010; 50).”

The mocking that Paulina suffered because of a grammatical mistake perpetuates insecurity for all students in that learning environment as many fear possible harassment. Instead of being mocked, students should receive affirmations for their multi-language skills.

Further, shock has been a common sentiment in Indígena youth’s testimonies regarding facing more discrimination based on language and physical appearance at the hands of Mestizxs than their “American” counterparts. Paulina recalls this sentiment when she shares her experience with marginalization in middle school, as she states,

“I would say like the American kids were more understandable. ‘Cause maybe they assume we’re all Mexicans, they didn’t really care what part of Mexico you were from or if your skin was darker. It was just within the Mexican culture that they do treat you bad because of your darker skin or because of your features, indigen-ous features. I mean it was just between Mexicans, so that’s what... I don’t know, that was the hardest part to understand, like hey, we’re from the same country (Kovats 2010; 50).”

Even though she acknowledges the existing biases held by English-speaking white students, she makes it clear that the abuse by Mestizx students was worse. The abuse from her peers leaves Paulina feeling betrayed, and thus, she states, “that was the hardest part to understand, like hey, we’re from the same country (Kovats 2010; 50)”. This is just one demonstration of the long history of discrimination and the disconnect between Mestizx and Indígena
students.

Consequently, negative stereotypes around their physical characteristics and language access prevent Indígena youth from fully integrating and being welcomed into school culture. Mocking can cause Indígena youth to feel ashamed of speaking indigenous languages in front of their peers. As stated by a high schooler,

“Sometimes I feel embarrassed talking in front of the class in my own language with my friends because they start calling us names and curse at us. When they do that, I’d rather just not talk or tell them I’m from another place (Perez, Vasquez, Buriel 2016, 259).”

The sentiments and acts of alienation caused by negative comments increase the desire of Indígena students to be part of the general environment. Hence, some Indígena youth decide to only speak Spanish or English to not be as ostracized (Lee 2007). This can cause a change in Indígena students’ identity, creating a separation between their private home life and their school experience, as well as weakening their connection to their roots and traditions.

Identity and Language

Hiding of Community of Origin

The shame that Indígena students feel around their language can be so great that it can lead students to hide their identity. It is commonly reported by Indígena students that they avoid expressing where they are from to others. Instead of specifying, many overgeneralize and state that they are from Mexico. In this way, they avoid further discrimination by being labeled indigenous. As shown with two elementary school sisters that only speak English to each other in public and when privately asked about why they did not speak Mixteco in the classroom, they responded, “No, it’s a secret!” (Kovats 2010, 43). These young girls are aware of the biases they face. At a young age, Indígena identity starts to develop as a secret and becoming more prevalent as youth grow older.

The secrecy and protection of Indígena identity from Mestizo students are reflected in the testimony of Paulina and Julieta, Mixteco young women. Both describe only stating that they were from Mexico and not from Oaxaca, in order to avoid discrimination. As Julieta states,

“No, siempre decía que era nomás de Mexico. I wouldn’t say I was from Oaxaca. Maybe because I don’t know, people would say okay si es de Oaxaca es una india y no sé qué tanto. (Kovats 2010, 50).”

The fear of being singled out and the strong stereotypes and biases against Indígena populations make youth feel like they have to hide their indigenous heritage. Their lack of cultural expression prevents youth from being able to explore the different intersections that comprise their identity.

The lack of open identification with their communities of origin is directly connected to the unwelcoming practices that schools partake in. For example, the lack of safe spaces for youth leads them to hide their Indígena identity. Not only do students suffer a disadvantage because of the physical separation, but the lack of affirmations of their Indígena identity further creates a barrier. It leads to even greater difficulty in acquiring English. Different research has proven that through support and encouragement of home languages in the classroom, acquisition of English increases (Llanes 1981). Therefore, acknowledging home languages and giving students space to explore their identities in the classroom would increase learning success.

Language Brokering

Not all experiences are negative, and some are rather beneficial and give pride to Indígena youth, such as serving as language brokers for their family and community. Indígena children play the role of translating between their respective Indigenous language, Spanish, and English for their family and other people. Their language abilities are demonstrated in the testimony of a Zapotec woman as she recalls her experience,

“I’ve translated a lot for my mom, like the forms she gets, mail, my dad’s insurance forms … when I translate for them it’s usually from English to Zapoteco. For my cousin who arrived from Oaxaca, I took her to get enrolled in high school and I just explained the whole process in Zapoteco. … At my little brother’s open house and back to school nights the teachers present in either Spanish or English and I just tell my mom what they said in Zapoteco” (Perez, Vasquez and Buriel 2016, 262).

Indígena youth recognize the importance of their translation work and take great pride in their contribution. The dexterity of the language brokering youth are partaking in needs to be recognized as a highly specialized skill and celebrated within schools as an asset.
Language Justice Programs and Initiatives

Mixteco/Indígena Community Organizing Project

As a response to the lack of indigenous language interpretation services in medical contexts in Ventura County, community members, along with nurse and activist Sandy Young, founded the Mixteco/Indígena Community Organizing Project (MICOP) in 2001. MICOP has evolved to become a key community activist organization for Ventura County’s Indígena community. They hold and coordinate different initiatives and programs to facilitate the distribution of resources. For example, the program Puentes connects community members to public resources, the initiative Plaza Comunitaria helps adults finish their primary education, the Tequio youth program empowers school youth to reclaim their roots in a fight for educational justice, and Radio Indígena shares resources and provides programming in Indigenous languages (Campbell and Reyes Basurto In press). These are only a few of the many programs that MICOP coordinates to help the Indígena community on California’s central coast.

“No me llames Oaxaquita” Campaign

Through MICOP’s Tequio youth group, youth have worked on campaigns to create a more welcoming space for themselves in school through the campaign “No me llames Oaxaquita” (Don’t call me little Oaxacan). This campaign launched in May 2012, demanding that the offensive words “Oaxaquita,” “Indito,” and “Indio” not be allowed to be used within schools (López 2016). After months of campaigning, they had their demands met through the Oxnard School District. This was a strong step forward for creating welcoming spaces within schools. The campaign provided a physical and emotional space where the voices and needs of Indígena youth were heard, something that is not common within the education system.

This campaign brought to light many testimonies regarding extensive discrimination faced by students, parents, and community leaders. The testimonies shared throughout the campaign created solidarity among Indígena folks. This campaign was reported on by various news agencies nationally. With their testimonies, they have begun to break down the homogenous image Mexico tries to portray. Youth are campaigning for better language representation and are demanding to be treated with the same rights as their non-Indígena peers.

Language Maintenance

Since 2015, MICOP has been partnering with linguists at the University of California, Santa Barbara, to start efforts for indigenous language maintenance and documentation. In 2015-16, Professor Eric W. Campbell and community member Griselda Reyes Basurto offered a graduate Linguistic Field Methods class that touched on phonological transcription and analysis, the development of a practical writing system, and the development of practical resources for the community, among many other topics (Campbell and Reyes Basurto In press). Through this class and further efforts, Campbell and Basurto contributed to the launch of classes intended to teach community members a practical writing system. The efforts to document, revitalize, and provide resources for the community bring hope that youth will grow up with more resources to be able to fight the discrimination that they face and to continue to share their culture with future generations.

Conclusion

The lack of resources aimed toward Indígena students in schools leads to a negative school culture that is uninformed about the historical and present-day discrimination Indígena youth face. This lack of information fosters negative stereotypes and ideologies, affecting the way that Indígena youth are perceived by their peers. Thus, leading to cycles of harassment, primarily by Mestizo students, based on Indígena students’ language and physical characteristics. The constant discrimination that Indígena youth face can lead them to have harmful views about their own identity, reflecting on youths’ decision to speak English or Spanish instead of their indigenous languages. To help prevent bigoted practices and language loss, schools need to implement programs that value all identities of students. Therefore, the questions arise of what possible resources can be implemented within schools to better serve the needs of students. In order to find guidance, it is important for schools to turn to organizations such as MICOP to follow their leadership in fostering safe spaces for Indígena youth. Overall, it is important to validate and encourage all youth to explore their intersecting identities in the safety of their school.
References


Lee, T. S. (2007). “If They Want Navajo to Be Learned, Then They Should Require It In All Schools”: Navajo Teenagers Experiences, Choices, and Demands Regarding Navajo Language. Wicazo Sa Review, 22(1), 7-33. doi:10.1353/wic.2007.0009


About the Author

Fátima was born in Michoacán, México and migrated to Oakland, California in November of 2004. She grew up in the inner-city as the oldest daughter and became her family’s translator soon after settling. However, she quickly realized the condescending looks her family members would receive as she translated for them, so she became an avid motivator for her family to attend English classes. Further, growing up in underfunded schools she noticed the lack of resources for students but specifically for parents, as they struggled to communicate with predominantly English-Speaking teachers. These inequalities have been a driving factor as she pursued her bachelor’s degree in Latin American & Iberian Studies. She hopes to someday give back to her community by helping bridge the gap of language access. She has been able to explore some of these injustices within the Indígena community through the strong and unconditional mentorship of Dr. Eric W. Campbell. Dr. Campbell has been an influential force as she considers future educational routes.
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History, University of California, Santa Barbara

Abstract
In the seventeenth century, Massachusetts Bay Colony leaders often meted out bodily punishments with the intention of shaming offenders. Both the type of crime presented and the bodily punishments given reflected a deliberate strategy on the part of Puritan leaders. By examining the Colony’s court records between 1630–1675, this paper explores what a Puritan legal system looked like with respect to early bodily chastisements. Almost all the crimes that were punished through physical correction also had some sort of bodily violation. No matter how gruesome, the punishments represented the community’s efforts to return the offender to the body politic.

Introduction
In a trial held on the 3rd of October in 1632, magistrates in Massachusetts ordered local townsman Nicholas Frost fined, severely whipped, and branded in the hand with a hot iron. Once the punishments had been administered, he was to be banished from the colony. Should he return, he faced death. Convicted of theft, drunkenness, and fornication, the court declared that Frost “shalbe kept in boults till his fines be paid,” after which the rest of his punishment would be meted out, or delivered, afterward.

Records like this one indicate that the leaders of the Puritan society in the Massachusetts Bay Colony thought it natural to discipline the body in various ways as a fitting punishment for certain sorts of crime. These punishments included wearing a letter denoting the crime on a garment, being placed in public ‘bill-bowes’ (e.g., iron bars with sliding shackles) for a set amount of time, and other sentences, shameful, painful, or both. To contemporary readers, such punishments look, at the least, strange or even perverse.

A hundred years later, the newly formed United States witnessed the end of punishment as a public spectacle. A more modern criminal justice system would instead turn to penitentiaries, prisons, and other institutions to discipline transgressors behind closed doors. According to Michel Foucault’s study of this shift, by the end of the eighteenth century, “the body as the major target of penal repression disappeared.” But despite the disappearance of these barbaric forms of torture on the physical body, modern discipline of the minds and souls of criminals often exerted a far greater intrusion than the bodily punishments that preceded it. Historians since Foucault have produced many notable works dealing with crime, punishment, and law in early New England. Most, however, have focused on the Foucauldian moment of transformation in the eighteenth and early nineteenth centuries; few have specifically explored the role of the body in criminal courts.

Even though bodily punishments were no longer the public spectacles they had once been, it does not necessarily mean that they disappeared altogether. Sometimes public viewing just took another form. For example, sociologist Kai Erikson notes “it is interesting that the ‘reform’ which brought about this change in penal practice coincided almost exactly with the development of newspapers as a medium of mass incarceration.” Sure, we no longer travel to the center of town to witness beheadings of criminals, but a “considerable portion of what we call ‘news’ is devoted to reports about deviant behavior and its consequences.” even though “these items” might not be inherently “newsworthy.” The modern
era has many examples of bodily punishments, warranted or not, in the form of torture; these include Jews during the Holocaust who were stripped of their identities through various means of torture; alleged affiliates of known terrorist groups, held by the United States military, who underwent ‘enhanced interrogation techniques’ (a euphemism for systematic torture); and minorities in the American criminal justice system who still live with inhumane bodily experiences such as violence, sexual abuse, discrimination, overcrowding, and other threats to health and safety. In fact, modern Americans often contend that the main goal of the criminal justice system is correction and rehabilitation; but the very nature of imprisonment—with its emphasis on involuntary confinement—implies a de facto bodily punishment.

Examination of bodily punishments in seventeenth-century Massachusetts reveals complexities not anticipated in Foucault’s model. To further examine and analyze punishment in colonial Massachusetts, this paper explores over 250 cases drawn from the first legal records of the Massachusetts Bay Colony spanning the period from 1630–1675. This colony is often viewed as one of the so-called “Puritan” colonies of early New England, colonies founded in the early seventeenth century by some of the most exacting ‘Hot Protestants’ of the English Reformation. When these Puritans were given the opportunity to create their own legal system, they based it on a modified version of the English common law, transformed in places to fit particular scriptural interpretations, albeit cautiously, as they had no desire to arouse outside scrutiny.

This paper investigates the early Puritan legal system of Massachusetts and focuses on bodily chastisements in actual practice. Whipping, branding, shaming, restraint, and banishment may seem cruel—a common and modern stereotype of Puritans features severe punishments. Foucault’s analysis of unrelated, unreformed European legal practices suggests, in contrast, that these punishments made up an unremarkable part of early modern judicial methods. But there was something unique about the Puritans’ use of bodily punishments. First, they were employed in crimes that in some way involved desecration of the body. Of all the crimes found in the records, only four dominated: drunkenness, burglary/theft, unruly speech, and malicious speech. Three of these categories clearly involve criminal misbehavior on the body, either on one’s own, or that of another person’s; the fourth, burglary/theft, made up a metaphoric attack on persons or their simulacra. Thus, not only did the punishments meted out focus on disciplining the body, the crimes themselves involved some form of bodily misbe-

havior that the Puritans abhorred and desired to stamp out.

The second argument addresses the Puritan legal system’s intense focus on the body. While this paper cannot fully prove at this point, the evidence suggests that Puritans themselves modified English law to bring it into closer alignment with their interpretation of the sacred scripture, creating a distinct variant of early modern practice. Finally, these modifications affected the types of punishments given out. Puritan judges and juries meted out bodily discipline with the humane intention of reforming and reincorporating the convicted person into the body politic. A communitarian intent lay behind even the most brutal sentences.

Migration to New England: Origins of Massachusetts Bay Colony and its Legal System

To understand the legal system of Massachusetts Bay, we first need to grasp its religious and political background as a Puritan colony. Puritans disapproved of the religious changes brought forth by the English Reformation and sought to leave England. According to some, God provided New England as a place where Puritans could take refuge, and the Puritans would create a new church, one which God wholly approved. Most importantly, the idea that God had set them the task of creating a new (and better) church and society explains the Puritans’ concern with creating a revised legal code that matched their religious beliefs. But this new code could not smack of theocracy, or they might otherwise be charged with unlawfully separating from both English law and its official church.

The Puritan churches were largely guided by the Bible, which they saw as a complete guide. The Congregationalists had not established a formal set of laws as most members believed laws should be created over time “by practice and custom.” As early as 1635, however, many of them had advocated for a formal set of codes. As the colony grew in size and complexity, its leaders realized it would eventually need positive law, or a written legal code to clarify its governance of colonists. John Cotton proposed An Abstract of Laws and Government in 1636, but it was never officially adopted. The first authorized legal law code was published in 1641. The Massachusetts Body of Liberties, written by Nathaniel Ward, a Puritan clergyman, drew upon the Magna Carta (1215) and the English common law. The Body of Liberties applied to the entire colonial population in a uniform way—a simplification of the English common law in which different parts of the English population
might have had different rights based on somewhat idiosyncratic regional or institutional custom. A succeeding legal document, The Book of the General Lawes and Libertyes Concerning the Inhabitants of the Massachusets [sic], published in 1648, included a more thorough list of laws that comprised not only the liberties but enumerated certain restrictions on colonists’ behavior. These Laws and Liberties of Massachusetts would govern the colony for the next century and included descriptions of crimes and details about how punishments were to be carried out.

At least ten laws dealt with the body. Offenses included within the capital laws—murder, anger/cruelty, poisoning, bestiality, sodomy, adultery, man-stealing, and rape—were all crimes that had the body as their source. Among other crimes, the severity of the offense seems to have dictated whether it was handled with a fine or whether those convicted received bodily punishments. So some lesser crimes—arson or fornication—were punished by fines, while more severe ones, such as forgery, heresy, or extreme cases of fornication, were punished by the pillory, banishment, or other corporal punishments. Nevertheless, Puritans also included limitations on punishment, including provisions against double jeopardy and specifications that bodily punishments must include “none that are in-humane, barbarous or cruel.” Lastly, when one was subject to be punished by torture, the law stated that “no man shall be beaten with above forty stripes for one Fact at one time. Nor shall any man be punished with whipping, except he have not otherwise to answer in the Law, unless his crime be very shameful, and his course of life vicious and profligate.” This law made clear that a criminal could not be tortured indefinitely and only those that performed shameful, vicious, or profligate crimes could be subject to the lash.

### Summary of Data

#### Defining Crime

As Kai Erikson wrote in his classic historical sociology of Puritan New England, “deviance is not a property inherent in any particular kind of behavior; it is a property conferred upon that behavior by the people who come into direct or indirect contact with it.” Thus it is the members of society who define which acts are deviant and “create the machinery of control in order to protect itself against the ‘harmful’ effects of deviation.” In the trial of Nicholas Frost that opened this paper, his deviance included theft, drunkenness, and fornication, and the punishments conferred upon him were a fine, whipping, and branding, respectively.

The court cases studied ranged from full and detailed records to brief and fragmentary mentions. Most of the criminal records were written with brevity—a line or two at most—and therefore many lack much background information or context. Even though the individual records are scanty, it is possible to do a collective analysis of trends within some frequently prosecuted types of crime to see patterns of punishment. In this way, a collective analysis of the records reveal how law and governance were intended to enforce the social norms of seventeenth century Massachusetts. An analysis of the colony’s Court records from 1630 to 1675 revealed a total of 287 crimes and 323 associated punishments. The four most performed crimes can be broken down into four large categories: Drunkenness, Burglary/Theft, Unruly Speech (cursing, swearing, lying), Malicious Speech (rebellion, rumor mongering, and contempt for authority), and Obscure & Other Crimes.

### Table 1: Total Crimes and Punishments

<table>
<thead>
<tr>
<th>Crimes</th>
<th>Total Crimes</th>
<th>Total Punishments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>286</td>
<td>323</td>
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### Table 2: Crimes

<table>
<thead>
<tr>
<th>Crimes Performed</th>
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</thead>
<tbody>
<tr>
<td>Drunkenness</td>
<td>64</td>
</tr>
<tr>
<td>Burglary/Theft</td>
<td>30</td>
</tr>
<tr>
<td>Unruly Speech</td>
<td>25</td>
</tr>
<tr>
<td>Malicious Speech</td>
<td>21</td>
</tr>
<tr>
<td>Obscure &amp; Other Crimes</td>
<td>146</td>
</tr>
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### Table 3: Punishments

<table>
<thead>
<tr>
<th>Punishments Meted Out</th>
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</thead>
<tbody>
<tr>
<td>Fines</td>
<td>96</td>
</tr>
<tr>
<td>Whippings/Severe Whippings</td>
<td>89</td>
</tr>
<tr>
<td>Settings in Bills/Stocks</td>
<td>28</td>
</tr>
<tr>
<td>Punishments</td>
<td>15</td>
</tr>
<tr>
<td>Obscure &amp; Other Punishments</td>
<td>95</td>
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</tbody>
</table>
bodily crime by analogy, as seventeenth-century New Englanders saw a house or building as a metaphoric body, according to historian Robert B. St. George. As St. George notes regarding witchcraft cases, there exists a “metaphoric equivalency drawn between the dwelling house and the human body, between architecture and the extended range of meanings attached to the concept of embodiment.” For example, witches attacked houses because “these structures of wood, brick, and stone were material metaphors of the human body... the house references malefic assaults against the family unit (the “little commonwealth,” or dynastic body), the church (Christ’s body), government (the political body), and community order (the social body).” Following St. George, burglary/theft can more easily be seen as a crime against the body; malicious speech attacking the government or the church, for example, can more easily be seen for its inherent nature as an assault on the body politic or the body of Christians.

Figure 1: St. George, Robert B. The Human House and Its Parts in Seventeenth-Century New England. Drawing. An explicit visual associating parts of the home with parts of the body.

When we look at the punishments meted out (Table 3), all of them, except fines, directly affected the body. The list includes whip-pings/severe whippings, settings in bill-bowes (similar to pillories) or stocks, and banishments. Using Nicholas Frost’s case once again as an example, he committed three different crimes: theft, drunkenness, and fornication. He received three different punishments: a fine, a whipping, and a branding. While linking certain punishments to particular crimes may not be simple, the court records do reveal which of those punishments appeared the most often, and it is not a surprise that most target the physical body.

Covering every crime and every punishment found in the records lies beyond the scope of this paper, which is why only the four most prominent crimes and punishments are analyzed. The Puritans’ intense focus in the body is apparent, however, in both the court records and the colony’s legal codes. For example, they sought to rectify sexual (hence bodily) transgressions, such as filthy/unchaste behavior, adultery, fornication, and rape; and violent transgressions against the physical body, such as murder, abusive behavior, burning houses, manslaughter, and striking. Furthermore, the Puritans sought to punish these transgressions by targeting criminals’ bodies; this included imprisonment, hard labor, the death penalty, forcing their tongues in a cleft stick, cutting off their ears, and branding them with a hot iron. The crimes they prosecuted were suited to their interpretation of—what was morally wrong in the eyes of God—the sacred scripture, and the punishments they meted out were meant to reform and reincorporate convicted persons back into society.

Analysis of Most Prosecuted Crimes

Drunkenness

Drunkenness was the most common crime, tried in court sixty-four times between 1630–1675. Drinking, per se, was not evil, but an excess of it was. The Puritan interpretation of Scripture held that drunkenness was a crime precipitated by the Devil. They argued that this sin could also guide drunkards into performing increasingly atrocious acts such as robbery, adultery, and even murder. The Puritans, however, desired reincorporation, so they did not sentence transgressors to death but arranged for a more gradual system of penalties that encouraged a drunkard to reform.

In most instances, the penalty was merely a fine, but there were occasions in which one was bound to good behavior. More serious or repeat offenders might have been set in bill-bowes/stocks, or, in extreme cases, whipped or severely whipped. Robert Coles was one such habitual drunkard who committed at least four drinking offences and appeared in court in the span of three years. For his first two appearances in court, Coles was fined, but his third and fourth appearances had more grievous consequences. In 1633, he was not only fined for “abuseing himselfe shamefully with drinke,” he was also “enjoyned to stand with a white sheete of paper on his back,” in which the word drunkard was “written in greate [i.e., either large or capital] lettres to stand therewith soe longe as the Court thinks meete [sic].” Then in 1634, Coles was disenfranchised and forced to “wear about his necke, & soe to hange upon his outward garment, a [letter] D, made of redd cloath, & sett upon white.” This punishment would not be brief nor take place behind closed doors for he was required “to continue this for a year, & not to leave it of att any time when hee comes amongst company.”

Although Puritans believed alcohol was a necessary form of entertainment, indeed deeming it a “lawful liberty,” they only accepted it if taken in moderation. Excessive drink was not only a sin but was
also a disturbance, and the behaviors of repeat offenders only served as examples of its disruptive manifestations. Coles’ trials reflected the notion that repetition of an undesired behavior in Puritan society led to repercussions with increasing severity, often using the physical body in order to publicly shame a deviant. For example, in his third offence. Coles merely had to stand for a couple of hours holding a simple sheet of paper with the word drunkard written on it, whereas in his fourth offence, he was forced to wear for an entire year a red-colored letter D sewn on a white-colored garment.

Bodily punishments were often meant to be a temporary condition, a ritual which set a member apart and made obvious to the rest of society that he or she had made a mistake. The criminal is first “separated from the village, inducted, go through a change-of-status ceremony, and are then reincorporated into the village with new status” as a noncriminal and a regular member of society. Whether the purpose was to temporarily shame an individual or leave a visible mark, such penalties were not meant to last forever nor meant to ostracize members of society, but instead provided in order to correct deviant behavior. It was pertinent for the punishments to be visible because they not only served as deterrents but as methods of placing social pressure on deviants. In a godly society such as Massachusetts Bay, belonging meant striving to be a better individual and accepting the advice and help of other comrades.

Thus, the punishments for repetitive drunkards may appear cruel at first glance, but the underlying purpose of the law was to ensure social order and, therefore, protect the body politic. In 1634, Robert Coles made his fifth appearance but, this time, in a redeeming manner. Just two months prior, he was sentenced to a year of public scrutiny, but seeing his “submission and [hearing] testimony given of his good behavior,” the court reversed their initial decision in the fourth trial. This indicates that Puritan leaders placed an emphasis on rewarding acceptable and repentant behavior for they were willing to reverse ‘cruel’ bodily punishments.

**Burglary/Theft**

Punishments for burglary and theft, the second most common category of crime, included branding various parts of the body with a hot iron, whipping, cutting off thieves’ ears, and death. However, the law in practice did not emerge as harsh as it did in writing. In fact, the Puritans did not often resort to branding thieves with hot irons nor sentencing them to death. Of the thirty burglary and theft cases, twenty-five resulted in whippings or severe whippings, and two of the thieves who were whipped were also branded with a hot iron—one on the hand and the other on the head. No whippings were administered in the remaining five cases, but three involved public sanctions in which the thieves were either set in the bill-bowes, set in the stocks, or forced to wear the letter T, for thief, upon his garment.

If those of a lower status performed the crimes, bodily punishments were often inflicted right away; not only were they more susceptible to committing burglary or theft, they were also more likely to be tried in court for doing so. One such group were the indentured servants. While under contract, they were not allowed to marry, have children, nor own property. Thus they were more likely to steal practical objects, such as victuals (food or provisions), clothing, and other items of necessity, fundamental items which their masters (or people of higher status) often had plenty enough of. For instance, servants were whipped for stealing loaves of bread, pigs or other cattle, victuals from their masters, sheets, a pair of shoes, beans, etc. They were also easily caught as they attempted to run away.

Some indentured servants lost further freedoms upon committing burglary or theft; they were subject to tighter scrutiny from their masters, and bodily punishments were used in order to incapacitate them, force them to serve longer terms, or turn them into slaves. Such cases disclose that bodily punishments were often tied to the loss of freedom, especially for the lower echelons of Puritan society. As mentioned earlier, robbing or stealing from a house or a person was a crime against the body. Because they were not allowed to own property, servants had no houses of their own. They lacked a body of security and protection, core elements of a home, and burglary and theft against their masters who possessed such bodies were their means of fulfilling that void. Of course, masters viewed this fulfillment as attacks on their own bodies, and since they procured power more easily than their servants, they were able to create the ‘machinery of control’—by using the law as a tool to quell such attacks—in order to protect themselves against the ‘harmful’ effects of deviation.

**Unruly and Malicious Speech**

Unruly speech involves those who curse, swear, and lie. Those who “shall swear rashly and vainly either by the holy Name of God, or any other oath” were fined. If a profane swearer was not able or utterly refused to pay the fine, he was “committed to the Stocks there to continue, not exceeding three hours, and not lesse then one hour.” Unruly speech was not a severe crime punishable by death, so the most common forms of punishment for this crime
were whippings and fines. Of the twenty-five cases of unruly speech, eight ended in whippings or severe whippings and six ended in fines. Similarly, malicious speech against the government was not a sin in the scripture, but it was dangerous to hold these opinions for it threatened the stability of the colony. Like unruly speech, a majority of transgressors were also whipped and fined, but those that spoke negatively of the Massachusetts government or had contempt for its authority were also forced to observe the law, were disenfranchised, or banished altogether. The authorities thought it best to disenfranchise or prevent from holding office those who spoke against the government; if one did not agree to the government, why, then, should they have a say in it?

Conclusion

Thus, seventeenth-century Massachusetts court records reveal that punishments for crimes focused on disciplining the body. By analyzing the most performed crimes, such as drunkenness, burglary & theft, unruly speech, and malicious speech, it becomes intelligible that the crimes themselves involved some form of bodily misbehavior, which the Puritans abhorred and desired to stamp out.

The Puritans arguably revised English law to bring it into closer alignment with their interpretation of the sacred scripture; they turned certain sins, such as the excess of alcohol and lying, into crimes, and they justified some of their punishments through the use of scripture. Although some of the punishments appear cruel, their primary purpose was to protect the body politic. The Puritans’ intentions lay in reforming and reincorporating convicted persons back into society.

About the Author

Shekina Medalla is a third-year History and Sociology double major. She was the only junior to have been accepted into the 2019–2020 Senior Honors Seminar in the History Department and will graduate with distinction in the major. The research she conducted on her thesis helped her realize her passion in studying the history of law and hopes to pursue this path after her Undergraduate Career at UCSB.
Subjective dream experiences index students’ waking affect, individual concerns, conflict, and unconscious thoughts

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Abstract

Dreams are the subjective experiences that occur during sleep, and their subject matter differs as a function of sleep stage or time of night. Dream content is reflective of the activity of brain structures concerned with information processing and memory consolidation [1]. Sigmund Freud, the founder of the psychoanalytic approach and author of The Interpretation of Dreams, described dreams as the “royal road to the unconscious.” He believed that the dreaming and the waking mind were continuous and that dreams were reflections of conflicts between unconscious desires and the conscious mind [2]. Freud proposed that the symbolic language of reported, or manifest dreams could be decoded to reveal the hidden latent dream—the result of a forbidden wish. His work inspired further research on the meaning and imagery contained within dreams that corroborated some of his views but not others, so that we now believe that dreams are the product of more than just unconscious desires [3]. This project seeks to comprehend the local understandings of dreams and their meanings—implicit and explicit—among young people in the United States today.

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Introduction

Dreams are the subjective experiences that occur during sleep, and their subject matter differs as a function of sleep stage or time of night. Dream content is reflective of the activity of brain structures concerned with information processing and memory consolidation [1]. Sigmund Freud, the founder of the psychoanalytic approach and author of The Interpretation of Dreams, described dreams as the “royal road to the unconscious.” He believed that the dreaming and the waking mind were continuous and that dreams were reflections of conflicts between unconscious desires and the conscious mind [2]. Freud proposed that the symbolic language of reported, or manifest dreams could be decoded to reveal the hidden latent dream—the result of a forbidden wish. His work inspired further research on the meaning and imagery contained within dreams that corroborated some of his views but not others, so that we now believe that dreams are the product of more than just unconscious desires [3]. This project seeks to comprehend the local understandings of dreams and their meanings—implicit and explicit—among young people in the United States today.

The dream theories produced by modern, empirical research most relevant to this study are the psychodynamic approach and the continuity hypothesis. Psychodynamic dream theory proposes that dream imagery not only reflects impulses and conflicts but also past and recent experiences, individual emotions, problems and attempts at their resolution, and perceptions of the self, others, and one’s environment [4]. The continuity hypothesis posits that the dreaming and waking minds are continuous in their cognitive functioning so that dreams are denotative of thoughts and events that occur in everyday life [2]. Other contemporary research-based conceptualizations of dreaming argue that the dream is largely focused on experiences in waking life, which are emotionally significant to the dreamer [5]. In a study on subjective dream theories concerning certain demographic characteristics, Olsen et al. (2016) reported that the highest agreement ratings among participants were for noncognitive psychological dream theories, which argue that dreams are reflections of that which occupies our minds and handles distress or emotional conflicts [2].

In his study on the repression of dream experiences, Calvin Kai-Ching Yu suggested that dream formation is driven by emotional turmoil [6]. Other studies have proposed that dream reports be considered indicators of mental health, as individuals with more symptoms of anxiety disclose dreams with more negative affect [7]. The present study examined dreams as an index of waking affect and stress in addition to folk theories, analogies, and metaphors utilized in dream recall and reporting. “Folk theories” as used in this study are the implicit or explicit understandings individuals have about what is happening in their dreams. They become cognitive frames and a means of interpreting dreams and can be classified using content analysis.

The purpose of this interview-based anthropological research was to assess commonalities and differences in individual university students’ dream experiences in order to understand if and how these dream experiences shape and reflect everyday life in our society. This study is anthropological in nature because this field has made significant contributions to our understanding of dreams. For example, in her study of Fijian dream and nightmare experiences, medical and psychological anthropologist Barbara Herr Harthorn suggested that nightmares and the affectivity of dreams, although not well studied cross-culturally, could be a promising avenue of research for studies on “individual and shared stress and conflicts” [8]. In my literature review of dream interpretation in American Indian groups, I learned that twentieth-century anthropologists documented how dreams affected every aspect of everyday life in California and Southwest Indian groups, as dreams were associated with doctoring and illness, songs, myths, hunting, ritual, and ceremonies. A paradigm has since developed in anthropological literature that demonstrates the importance of dream interpretation to individual identity in non-Western cultures. This model postulates that dreams are an alternative means through which people make sense of reality and that the study of attitudes toward dreams held by certain groups can contribute to the anthropological understanding of their world view. These perspectives, or the ethnography of dreams, can be viewed through a different lens, a culturally consistent one which examines how the convictions of a people fashion and reflect the affective dream experience or the parts of dreaming related to one’s feelings and beliefs [8]. One of the objectives of this research is to draw on the approaches used in studies of other societies to look at the dream experiences of undergraduate students at UC Santa Barbara through that lens.

Ten undergraduate students participated in semi-structured ethnographic interviews (i.e., interviews with a structured interview protocol but the flexibility to pursue particular aspects of the interviewee’s interest) focused on topics such as dream frequency, awareness, content, characteristics, effects, continuity with daytime experiences, and intersections with sleep behavior. The majority of participants reported that their dream experiences were always from their own perspective and commented on their unusual content, but this content varied descriptively. Most partic-
participants produced folk theories about dreams and their meanings in line with psychodynamic theories related to individual affect and theories of cognitive process and continuity, but a few claimed that their dream content and waking concerns were highly discontinuous. Surprisingly, all participants reported getting sufficient sleep, with most reporting getting between six and eight hours per night. The findings suggest that dream reports can be an indirect means of measuring sleep hygiene, stress, and other waking emotions, and might reveal conceptions of the self, others, and the world. Despite the fact that dreams are a part of healthy cognitive functioning, the majority of participants admitted to rarely discussing or thinking about their dreams. This is not surprising, as our society seems to devalue dream experiences, and the subjective aspects of experience reflected in dreams tend to be subordinated in everyday life by our material and biological conditions. The study results serve as a reminder of the importance of subjectivities to anthropological research as reflections not only of individual experiences but also of shared meanings.

**Methods**

The interview protocol was developed in accordance with Institutional Review Board (IRB) guidelines so that interviews were recorded with the consent of the participants and following the signage of the consent form. The questions were organized into topics so that interviews began with the researcher asking about the everyday lives of the respondents, and then later about what typically happens in their dreams, recent dream experiences, and dreams they had as a child, in addition to their sleep habits and opinions on what affects sleep and why dreaming happens. The interview process was piloted to determine which questions might be modified and made more understandable, and of the study received IRB approval, participants were recruited by word of mouth and using GroupMe. Interviews were conducted in a location of the participant’s choosing, either on the UCSB campus or in Isla Vista, and incentives in the form of $20 gift cards were given for participating. The interviews were recorded and transcribed verbatim, and interview duration ranged from thirteen to thirty-one minutes. The present analysis is based on content analysis of interview transcriptions, and the key themes of folk theories, analogies, and metaphors, and perceived stress were determined by compiling responses into a spreadsheet matrix and comparing them.

Six of the participants recruited were female and four were male. Seven of the participants were in their second year of university and the rest were fourth years. There were three Communication majors, two Communication and Economics double majors, one Anthropology and Theater double major, one Computer Science major, one Earth Science major, one Geography major, and one Psychological and Brain Sciences major. All participants were California residents who came from Arcadia, Bakersfield, Chico, Cupertino, Irvine, Mill Valley, Oakland, Redlands, San Ramon, and Whittier.

**Results**

**Descriptive data on reported dream experiences**

All respondents reported relatively similar sleep duration, between five and nine hours of sleep per night and seven hours on average, and seven participants said they manage to get as much sleep as they need. All participants except for one reported going to bed between 12:00 a.m. and 2:00 a.m., and one participant reported a bedtime of 10:00 p.m. Wake up times ranged between 7:00 a.m. and 12:00 p.m. All participants reported their bedtime pre-sleep activities as being on their phone, with the majority using social media. In response to the questions: “Do you usually have dreams? If so, what are they like? Are they stories or disconnected events, and what happens,” four participants said that their dreams are stories, four others believed that they are disconnected events, and one reported their dreams as connected events. Nine participants stated that they encounter someone in a dream that they already know in the majority of their dreams, and one participant said they encounter someone familiar every two or three dreams. All respondents except for one who did not answer the question claimed that they usually appear as themselves in their dreams and not as someone or something else.

Half of the participants claimed that they had experienced sleep paralysis, which is when a person is aware upon waking or falling asleep but cannot move or speak. Three had experienced lucid dreaming, the experience where the dreamer is cognizant of the fact that they are dreaming. When asked if they dream in color, one participant claimed that they always dream in color, another stated that they do dream in color, and one said that they definitely had things in their dreams that they noticed are colors. Two participants said they did not know or couldn’t remember but probably dream in color sometimes, and one of these two said that if they did dream in color, the colors would be faint, like black and white. Three participants responded by saying that their dreams looked “normal” or like real life, and one stated that they...
see faded colors.

The dreams people reported involved a range of things the dreamer sees in their everyday life. These included the following: typical get-togethers and interactions with people familiar or important to the dreamer, attempts to escape someone or something, a feeling that something bad is about to happen, food or hunger, exploration of the forest or ocean, exam stress, awareness of some truth that others do not believe, a feeling of being uncomfortable and that something is off, fear, and the action of being stuck or in slow motion. Four participants reported having nightmares, and one of these reported having nightmares often. This concludes the descriptive data on reported dream experiences. In the next section, I will discuss the key themes of folk theories, analogies and metaphors, and stress.

Themes

More detailed content analysis identified three main themes that characterize the individualistic nature of dreaming and how people make sense of their dreams: folk theories, analogies and metaphors, and perceived stress. The folk theories of dreams are diverse and include theories on the continuity of dreams with waking-life, cognitive process theories, stress continuity theories, psychodynamic theories, descriptive-oriented theories, process-oriented theories, and theories on the discontinuities between dream content and waking concerns, dream recall, projection, activation-synthesis, and information processing. Due to space constraints, I will only be discussing folk theories on the continuity of dreams with waking-life, psychodynamic theories, and stress continuity theories, in addition to analogies and metaphors and dreams as an index of stress.

1. Continuity of dreams with waking-life

Six participants expressed implicit or explicit folk theories supporting the continuity hypothesis of dreams. Explicit folk theories directly state a belief about dream phenomena, dream causality, or the meaning(s) of dreams; implicit theories take such meanings for granted but can be inferred from the assumed links respondents make between, for example, dreams and their interpretations. For example, when asked why he thought dreaming happens, one participant described how thought processes that often occur during the day might continue during sleep:

[...] My brain likes to think of potential explanations for things that are or like trying to predict the future. [...] I do catch myself daydreaming, like thinking about like, all the things that could happen. So maybe that’s just like a habit of mine that continues while I’m asleep. So like dreaming would be like predicting the future. But, it would be kind of like, like predicting the likeliest future. [emphasis added]

This theory exemplifies cognitive continuity in suggesting that dreams are a continuation of habitual thought processes. In another example, two participants explicitly expressed the belief that their dreams are sometimes related to what they were doing or thinking about right before going to bed and one of them, in addition to another participant, said that they have a lot of dreams where the setting is familiar but what is happening is really different.

2. Psychodynamic theories of dreaming

Eight participants expressed implicit or explicit folk theories in line with psychodynamic theory. In response to the question: “Why do you think dreaming happens,” one participant answered with an implicit psychodynamic approach to dreaming:

I guess there’s some things that I think about during the day, like unconscious like subconsciously, and then during my or it’s like sticking in my head but I don’t really talk about it or anything and then usually, when I dream I realize like, the things that have been most important to me throughout that day will have like stuck with me without even knowing sometimes.

This folk theory is psychodynamic because it suggests that dreams are indicative of important thoughts and events existing outside of the dreamer’s awareness, and it is an example of cognitive continuity because dreams are described as realizations of thoughts that have stuck with the dreamer that express conceptions of self and one’s values. Another participant described an explicit psychodynamic theory of dreams as a way of resolving social conflict:

There’s been times where I’ve had like, disagreements with people I care about in real life and then in my dream, we always make up. And then it’s almost like a foreshadow for the future, as I know that it’ll run that way anyway. [...] I think, because my mind, in my mind, I’m hoping everything’s gonna work out then it happens in my dream and then it basically shows me how to resolve the problem.

This theory is in step with psychodynamic theory because the dream content stems from conflict and the participant’s desire to
find a resolution.

3. Stress continuity

Half of the participants described folk theories pertaining to either stress continuity or the relationship between dreams and stress-related, waking concerns. One participant explained how periods of prolonged stress cause her to dream more and how the subject matter of her dream experiences relates to what she is experiencing in the wake state:

I noticed that I feel like when I’m stressed for you know, some period of time in a row, days in a row, that I seem to dream more, and then they’re there. I don’t know. They’re not realistic. But if I really think about it, like what I’m experiencing is similar in theme to like what I’m stressed about.

Although the dream content is not a re-creation of what the participant is worried about while awake, they note that the themes of their stress dreams are related to the concerns of the stressful period during which the dreams occur. Another participant stated that his dreams usually stem from stress or the last thing he did before bed and recounted a couple of dreams he described as stress-related. In response to the question: “How often would you say that you encounter someone in a dream that you already know? If often, would you say that they act differently than they do in real life? Who controls their behaviors? What motivates them,” he described the feelings he experiences in dreams, with one being stress:

I’ve noticed that dreams that are more like stress-related and where I’m stressed out, people around me act like ruder, but like the dream, so like, I think that’s what controls them. So like whether or not how I’m feeling during the dream, if I’m feeling good, and that’s like a good and happy dream. They’re generally like the people they are. But if it’s like, I’m really stressed out and I’m really upset, like, they’re mean to me.

This participant expressed an implicit theory of projection and controllability in explaining how his mood influences the affective dream experience and whether or not the behavior of other people in the dream deviates from how they act in real life.

4. Analogies and metaphors

One of the things I looked for in dream reports was analogies and metaphors because of their importance as cognitive anchoring devices [9]. Seven participants used analogies and metaphors while describing their dreams, and the following are some examples:

[…] It’s like the best way I can describe it to you is like if you take you know those like there’s like fake pimple popping things that you can use. They’re satisfying, that feeling. Yeah, like the satisfying like when you like pop like those. I like- They use for packaging and stuff. So yeah, you know when you pop those like that satisfying feeling. That’s the type of feeling I would have when I’m dreaming. I don’t, I can’t remember like exactly how each object feels like but that’s like the general feeling of like all of them.

I would say I do have dreams. A lot of the ones I remember, I feel like do a lot of déjà vu like I feel like I’ve seen things in like my daily life that I’ve seen in a dream previously. […] I’d say they’re probably kind of more like how a sitcom has like a three to five minute like scene I’d say that’s a pretty accurate description of them, very specific things. Somebody doing something, you reacting a certain way.

In response to the question: “so you’ve never had someone in a dream act like strangely or do something that they wouldn’t normally,” one participant responded:

I mean, yeah, but like they do that later on. It’s not it’s not that people act regularly it’s that it’s it’s gonna sound really weird but like, you know, like That’s So Raven, it’s like that.

5. Dreams as an index of stress and waking affect

Two participants explicitly expressed how their dreams are occasionally related to what they had been feeling that day. Seven participants said that they had experienced fear in a dream or had woken up scared because of one, and two of them told me that they had experienced an elevated heart rate upon waking. One participant stated that they are sometimes scared to go to bed because they don’t want to have bad dreams. Half of the participants reported having dreams related to midterms and finals and during other stressful periods. One participant stated that she experiences something in a dream that she experienced during the day several times a week, and discussed how the anxiety she is feeling translates into her dream life:

My stress dreams usually come up around finals time. […] They all just revolve around you like being so anxious and like sitting in a test environment and like failing the test. And then I just like freak out and then I wake up just really anxious.

In relaying how her dreams reflect what she is stressed about and how those experiences augment that anxiety, this participant ex-
pressed a theory of stress continuity. Another participant reported
a similar folk theory when explaining how his dreams vary with his
mood:

[...]: Dreams are indicative of my mood but the content isn’t real-
istic. Like it’s not like, oh, me skateboarding[10] classes, me it’s me
like, jumping around like Spider-Man happy when I’m not stressed
out versus like the crazy like, dream about my my friend and the
math professor, which isn’t very realistic to be like during finals
week when I’m stressed out.

Both statements are implicit, psychodynamic theories of emotional
regulation that posit that dreams are the result of an individual’s
actual feelings and demonstrate how dream content might serve
as a measure of stress and other waking feelings.

Discussion
Participants did not report violent or sexual dreams or identify sym-
 bols in their dream experiences, so there is no evidence that they
are proponents of Freud’s ideas about the hidden psychosexual
meanings behind symbolic language in dreams. Most folk theories
were implicitly or explicitly psychodynamic as they related to indi-
vidual feelings and concerns, conflict, and unconscious thoughts.
All respondents reported encountering someone familiar to them
in an overwhelming majority of their dream experiences and this
sense of familiarity may be indicative of some continuity between
everyday life and dream life, which was the second most popular
form of folk theory. Participants generally had a hard time recalling
the use of their senses in dream experiences, which is suggestive
of their not being attuned to sensory modalities in the way they
made sense of their dreams and of a lack of cultivating memories
of dreams.

The many folk theories related to the affective dream experience
further illustrate how dreams can function as indices of stress,
fear, and other waking concerns. Dreams that are not explicitly
labeled as stress dreams might also be indicative of one’s mood.
For example, one participant reported a dream experience where
members of her family got into a car accident, and she believed
that it happened because she went to bed looking at news on
the deaths of Kobe and Gianna Bryant. Although in real life a car
accident would be labeled as a stressful and traumatic event, it
was not described as such. However, she did say that the dream
freaked her out, and talked about how she will only really think
about dreams if they are bad and involve family. A few partici-
pants described the emotional significance of dreams during
which family members were threatened, hurt, or killed, and it may
be that when people close to the dreamer are the central focus
of a dream, it has more of an impact on waking affect. Future
research should examine this, in addition to how dreams regulate
emotions and might help the dreamer realize and resolve internal
and social conflicts. Two participants, both male, mentioned either
having or not having superhero dreams, and this would also be
an interesting avenue to explore. Perhaps the presence of themes
such as this one is symptomatic of hypermasculinity or other as-
pects of the dreamer’s identity.

Participants appeared to have difficulty remembering dreams and
several confessed to not having thought about or discussed
dreams before. It was not easy for them to describe the kinds of
colors that they saw or for them to remember the dreams they had
in childhood, possibly because dreams were viewed as an individ-
ualistic experience in our society. This absence of discussion rein-
forces the increasingly observed lack of dream acknowledgment
in the Global North. Another factor contributing to the anti-dream
climate in the United States might be that our lives are saturated
by entertainment and graphic representation, and dream experi-
ences were reported by some participants in related terms. A few
participants used analogies and metaphors concerning television
shows, characters, and genres to describe their dreams. I looked
for these in reports because of their potential of use as heuristics
and insights into the analytical frameworks people use to piece
together the disconnected thoughts, images, and feelings that oc-
cur in dreams. Future research should explore this further because
people who are trying to make sense of something that they don’t
completely understand might anchor their views in things that
they do know about, and these understandings can enrich dream
theory.

As a cultural anthropology major, I believe that dreams are a
mechanism that helps the dreamer understand the real world and
are shaped by cultural beliefs. My convictions on the continuity of
dreams with waking life undoubtedly informed the angle of investi-
gation, my consideration of the findings most appropriate to elab-
orate on, and the framing of conclusions. The questions posed in
interviews, for example, tended to frame dreams as stories, which
might have led participants to believe that they needed to nar-
rate their dreams in a performative manner. The majority of partici-
pants were friends or people that had lived on my floor when I was
a Resident Assistant last year. Our shared experiences and identi-
fies as UC Santa Barbara students, in addition to their knowledge
of my hopes for the study, defined our interactions, responses to
questions, and in particular, the dream experiences that partici-
pants were willing to report. This might be why not all participants talked about nightmares, but it could also be because I did not ask about them in order for interviews to pose no more than minimal risk to participants. One of the advantages of knowing the students I interviewed, though, was that I did not need to be concerned with establishing rapport with participants.

The small, convenience sample was one of the limitations of this study. All participants were people familiar to the researcher, from California, and students at UC Santa Barbara. The sample was nonrepresentative and skewed slightly female, as only four of the participants out of the ten were male. The findings of this study are therefore not generalizable but suggestive. Future studies should expand the focus to a larger, more diverse sample with students from other universities and demographic groups.

Dream reports were given under somewhat unstructured conditions and if I were to repeat this experiment, I would formalize the interview process and recruit strangers. Some participants chose to be interviewed in public and noisy places. To have participants be comfortable with disclosing sensitive information, I would conduct interviews in private spaces in the future. I might ask participants to attempt to write down their dreams every morning the week prior to the interview to get people to think about them, as a few participants had difficulty with dream recall and expressed having not thought about them much before. Although interviews could not be in-person, studying affective dream experiences would be an interesting avenue to explore during the current COVID-19 pandemic because people are feeling more anxious than usual, and I have seen people on social media talking about how their dreams have been more vivid. More time at home might mean that people are increasingly attentive to their dream experiences and that they have a better sense of the relationship between dream content and emotions experienced during wake.

References
About the Author

Hannah is a fourth year, cultural anthropology major from Ellicott City, Maryland. She is a senior representative of the UC Santa Barbara Student Fee Advisory Committee and a former research assistant at the Walter Reed Army Institute of Research Sleep Research Center. She plans on attending medical school and drawing upon cultural and biological anthropology to better understand how health and illness are shaped and experienced in her work as a future ER Doctor.
Assessing Religious Tolerance of the Late Roman Empire

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Abstract
The topic of religious tolerance is one that spans the scope of human history. In the following essay, this subject will be examined within the context of the late Roman Empire (180-395 CE.). This ancient period represents a chapter of Roman history almost exclusively recounted by ancient Christian historians, the result of which has led to the establishment of the famous narrative depicting late Romans as severely intolerant of non-Roman religions—most notably, Christianity. Through the analysis of extensive documentation, leading to the uncovering of inherent Christian bias, this established history will be challenged in an effort to present a narrative which characterizes the Roman society as exhibiting substantially more religious tolerance than previously believed.

The late Roman Empire, defined as the period between 180-395 CE, was a period characterized by significant changes within the empire. One main change that took place was the ultimate movement away from traditional Roman religious practices and towards a new religion—Christianity. While “traditional religious practices” refer to the Roman polytheistic worship of pagan gods such as Jupiter and Neptune, Christianity, on the other hand, was inherently different due to its scripture and monotheistic nature. But, counterintuitively, the late empire is often characterized by Roman societies being intolerant of any non-traditional Roman religions. Through close analysis of primary sources, historians can study the ways and circumstances by which these other religions (particularly Christianity) experienced more tolerance from the Romans than previously believed. Ancient Christian historians such as Orosius (375-418 CE), Eusebius (260-340 CE), and Lactantius (250-325 CE) strongly contributed to the now-famous narrative of horrific persecutions endlessly carried out by Roman Emperors against Christianity. Due to the fact that many of the surviving accounts from this period were recorded by such Christian authors, it becomes paramount that these accounts be examined through the lens of each author’s likely bias. In doing so, some evidence even suggests, ironically, that Christians were, in fact, less tolerant of other religions than the traditional Romans.

Before examining the extent of Roman religious tolerance, parameters must be set by defining “tolerance” to gauge Roman attitudes and actions as either tolerant or intolerant. Within this paper, “tolerance” will be defined as actions by Romans to accept the beliefs and behaviors of non-Roman religions and to coexist in society with these religions (namely Christianity). Additionally, parameters can be established according to this definition wherein tolerance would also entail not targeting a specific religion for the purpose of eradication—hence, allowing the disliked religion (Christianity) to exist within the empire. Even with a clearly defined definition for tolerance, no assertion can be made which categorizes the late Roman Empire as either decisively tolerant or intolerant. In fact, the extent to which Romans tolerated other non-Roman religions was constantly changing based upon additional factors and circumstances within the empire. While there can be no blanket statement regarding the late Roman Empire’s tolerance or intolerance towards non-Roman religions, the empire displayed more instances of religious tolerance than intolerance. More often than not, acts of “persecution” against Christians were responses by the Roman Emperors to factors unrelated to Christianity itself, such as crises faced by the emperors throughout the period. In fact, this essay will attempt to prove how the majority of “Christian persecutions” were centered around the desire to expand traditional Roman paganism rather
than eradicate Christianity. Ironically, the intolerance of Christians towards Roman religious practices served as a catalyst for their own persecution from Roman Emperors. Prior to delving into the topic of Roman tolerance for Christianity, it is important to understand how the Romans treated other non-traditional religions that emerged within the empire. For example, the 3rd century Roman Emperor Elagabalus (218-222 CE) demanded the worship of a Phoenician sun god within the Roman Imperium when he obtained power. The sun god was distinctly different from the traditionally dominant Roman god (Jupiter) as this new deity hailed from the territory of Phoenicia—a region controlled by the Roman Empire, yet not included within traditional Roman culture. The emperor, who adopted for himself the actual name of the sun god—Elagabalus—was described by the ancient Roman historian, Herodian, to have “directed all Roman officials who perform public sacrifices to call upon the new god Elagabalus before all other gods.” The decree was met with no resistance from Roman senators, as no accounts have been found regarding any opposition pertaining to this new religion. It was not until the outlandish eccentricities of this emperor, accompanied by his outrageous personality, finally outraged the Roman army enough to cause the demise of the emperor and his religion. Nearly fifty years later, during the reign of Emperor Aurelian (270-275 CE), an additional instance of tolerance for a non-Roman religion occurred when this emperor adopted the worship of another sun god, Sol Invictus Mithras. This deity, already very popular with the Roman army, initially emerged within Persia prior to winning favor amongst the Romans. The sheer abundance of late 2nd century stone inscriptions, many of which depict the glory of this god, serve as evidence of the widespread influence this sun god held throughout Rome. As shown by the lack of opposition regarding the worship of the Phoenician god, Elagabalus, and the budding popularity of Sol Invictus Mithras, it becomes clear that the late Roman society exhibited tolerance for other non-traditional religions that appeared within the empire.

By establishing Roman tolerance for some of these other non-traditional religions, Roman tolerance of the Christian faith can now be examined. At the conclusion of the Severan dynasty (193-235 CE), Christianity infiltrated the Roman Imperium as Julia Maesa (grandmother to Emperor Severus Alexander) became educated in the faith by prominent Christian theologian, Origen. For contextual purposes, it is important to note that the Christian theologian, Origen, was not just any philosopher. A byproduct of the philosophical movement occurring within Alexandria at the time—and student of renowned philosopher, Ammonius—Origen elevated Christianity’s appeal from an intellectual standpoint, thus sparking an expansion of the faith amongst educated philosophers. Christian historian, Eusebius, described how Origen was summoned to Rome by a military escort so he could instruct the excellence of the Lord’s divine teaching within the Imperial Palace. This period during the late Roman Empire clearly constitutes tolerance of Christianity because the religion was accepted by the Imperial leaders of Rome without backlash. Origen’s influence within the Roman Imperium demonstrates how Christianity was beginning to spread among the more elite social class of Rome at this time.

As a result of the Roman Empire’s political instability during the 3rd century, Emperor Severus Alexander and his family were removed from power by the Roman army. After the very quick succession of multiple emperors, the Roman army eventually acclaimed the military commander, Maximinus, as the new leader. After assuming the throne, Maximinus issued a “persecution” edict against Christian priests and clergy chiefly due to the fact that the family of his predecessor—Severus Alexander—had been Christians. The word “persecution” was later used by Christian historian Orosius; however, it is important to note that the term fails to appear within any first-hand historical accounts of Maximinus. Such absence of this word lends credence to the notion that Christian historians constructed tales of endless persecutions initiated by Roman emperors. Additionally, according to Orosius’ own words, the action taken by Maximinus against Christians was not a result of intolerance for Christianity itself but was rather born out of a hatred towards Severus Alexander—who simply happened to be a Christian. This example would also support the former viewpoint that Christian “persecutions” occurred as a result of other outside factors which influenced the actions of Roman emperors.

Evidence that “persecutions” were instituted as a result of factors beyond the scope of Christianity becomes even more prominent during the reigns of Decius and Valerian—two Roman emperors who are infamous for Christian persecution. By the time Decius assumed the title of Augustus in 249 CE, many aspects of the Roman Empire were in a state of crisis. Roman historian and politician, Aurelius Victor, described the empire as entering “into a state of steep decline.” Another ancient historian of Rome, Zosimus, claimed that the previous emperor, Philip, had left the empire “in utter disarray.” Specifically, Persians of the rival Sassanian Empire were attacking the Eastern borders of the empire, Germanic tribes threatened Rome’s northern province of Gaul, smallpox ravaged the empire’s agrarian society, and the previously stable climate of the 2nd century began to severely dissipate throughout the 3rd century. While each specific crisis represents a fascinating topic within its own right, the important thing to understand is that the Roman Empire was confronted with a multitude of crises during the 3rd century. Such calamities, which quickly emerged after a stable 2nd century,
impacted how Decius viewed his empire as he began to conclude that his realm was being punished by dissatisfied Roman gods. Despite the apparent folly of this reasoning, it is important to remember that such a viewpoint would have been perfectly reasonable within a 3rd century society in which religion essentially dominated all aspects of life.

When searching for a way to save his empire from its apparent state of crisis, Decius (and many others) decided the only way to overcome their situation was to appease the Roman gods. To achieve this objective, Decius issued an empire-wide supplicatio calling for a universal sacrifice to the gods in order to ensure the safety of the empire. The edict demanded all Roman inhabitants to obtain a certificate of loyalty (libelli), which proved they had sacrificed to the Roman gods; however, by no means did the decree single out Christianity in an attempt to destroy the religion. Although surviving evidence indicates that mass cruelty was inflicted upon Christians who refused to perform this Roman sacrifice, such punishments may be explained by previous efforts to standardize the Roman law by legal authority, Ulpian (170-228 CE). By establishing uniformity within Roman law, the resulting legal system now emphasized that decisions be based on precedent, meaning that local decisions could take on empire-wide significance. For example, during the reign of Emperor Marcus Aurelius (161-180 CE), the decision by the Governor of Lyon to execute lawbreaking Christians likely found its way to Ulpian and became a precedent response for any disorderly Christians throughout the entire empire—including those who refused to obey Decius’ edict of Roman sacrifice. Therefore, the killing of such Christians who refused to sacrifice would not have been conducted out of hatred or intolerance of Christianity itself, but rather as a standard reaction to a pre-existing precedent within Roman law.

Two years later, the new emperor—Valerian—issued a “persecution” edict against Christians, which serves as evidence that the emperor’s primary objective was to implement universal Roman sacrifice, and not eradicate Christianity. Valerian proclaimed that senators, Roman knights, and other important men shall only lose their dignity, and not their heads, as long as they participate in this traditional Roman sacrifice. Not only was the Roman Imperium lenient towards high ranking Roman Christians, but also towards bishops as well. The trial of bishop Dionysius of Alexandria evidences this leniency while also exemplifying Roman tolerance of Christianity. According to a preserved transcription of the trial, Roman official Aemilianus asked Dionysius, “But who forbids you to worship Him, if he is a god, together with those who are gods by nature.” The question posed by Aemilianus displays how the focus of Valerian’s regime was clearly centered around the empire becoming unified under traditional Roman paganism—not the extermination of Christianity. Aemilianus’s question proves how the Romans were willing to tolerate Christians worshipping God, so long as Christians conducted sacrifices to the Roman gods as well.

After the death of Valerian in 260 CE, the Roman Imperial attitude towards Christians shifted as his son, Gallienus, gained sole authority over the empire and repealed the edicts of “persecution.” In common fashion with other ancient Roman Christian historians, Orosius claimed that Gallienus acted out of fear for God’s wrath and did not desire the same fate as Valerian—whose demise was supposedly orchestrated by The Lord himself. The edict issued by Gallienus, a result from Christian bishops, ordered the removal of the Roman army from Christian places of worship and the reinstatement of those places to Christians. By issuing the edict, Gallienus effectively allowed Christians within the empire to worship God in peace, through legal recourse, which returned to Christians their property, the emperor recognized Christians as full, property-owning, Roman citizens. This example of allowing Christians full citizenship in Rome clearly falls within the parameters of Roman tolerance for Christianity.

As a result of Gallienus’ edict, Roman Christians enjoyed legal status for roughly 40 years before Diocletian’s “Great Persecution” revoked it. This persecution did, in fact, specifically emphasize the eradication of Christianity. Clearly, this edict cannot be considered an act of religious tolerance. However, it is important to note that Diocletian allowed Christians to retain legal status for the first 20 years of his reign before enacting the Great Persecution. It also appears that a surprisingly different factor, beyond Diocletian’s own reasoning, may very well have influenced his decision: Within the city of Antioch in 299 CE, Christians reportedly interfered in a traditional Roman religious sacrifice by disrupting the taking of the auspices. Requiring a Roman priest to remove the entrails of an animal through sacrifice, Christians reportedly disrupted the ritual by impeding the priest’s ability to view (and decipher) these entrails. As Christians believed animal sacrifice to be a polluting ritual, their actions taken against the traditional Romans distinctly displays Christian intolerance for Roman religious practices. Deeply affected by the event in Antioch, Co-Emperor Galerius persuaded Diocletian into persecuting the Christians by holding imperial conferences, which included meticulous lobbying efforts from prominent Platonist philosophers, Porphyry, and judge, Sosipater. As a result of this Christian intolerance towards Roman practices, Diocletian was clearly subjected to immense pressure from Roman imperial elites and prominent Platonists to attack Christianity after 20 years of indifference towards the religion.
Prior to Diocletian’s edicts against Christians, a ruling of the Imperial Court displayed intolerance by deciding that Manichaeans (people following a dualistic Persian/Christian religion) were not Roman enough and consequently outlawed Manichaeism in 302 CE. Therefore, when Diocletian began issuing edicts of persecution against Christians in 303 CE, it would appear that the late Roman Empire was completely intolerant of any non-Roman religions at that time. The first edict against Christianity sanctioned the burning of churches and scripture while depriving Christians “of all honours and dignities.” The second edict “ordered all the presidents of the churches...be put in prison.” The third edict granted mercy to incarcerated clergy who sacrificed. Finally, the last edict ordered universal sacrifice throughout the Roman Empire. While these edicts clearly attempted to destroy Christianity, they were not universally enforced throughout the entire empire. Lactantius (Christian historian) described how, within the western half of the empire, Constantius only enforced the first edict of persecution. This is a powerful recognition by Lactantius, proving that even during the most religiously intolerant period of Roman history, there is evidence of tolerance by means of unenforced edicts.

After 10 years of persecution against Christians, Emperor Galerius (who originally drove Diocletian to ordain the persecution) issued an edict of religious tolerance in 311 CE. Galerius described how, against their best efforts, the Imperial Romans failed to establish traditional religious uniformity throughout the empire and now had to acknowledge “that there once again be Christians and that they meet in the buildings in which they used to gather.” However, this tolerance of Christianity did not come free: Galerius stated that, “Hence, according to this clemency of ours, [Christians] must supplicate their own god for our well-being, that of the Republic, and their own, in order that in every way the Republic will be made sound.” Through the issuance of this edict, Christians were permitted legal status again. However, Galerius also changed the terms of citizenship by no longer requiring Christians to practice Roman sacrifice, and instead claimed that internal prayer, on behalf of the empire, would be sufficient. Galerius’ edict of 311 CE is the ultimate example of Roman religious tolerance. Galerius was undoubtedly not fond of Christians, yet he relented to tolerate their religion in order to create a peaceful society.

Not long after this act of tolerance, Galerius died. A number of civil wars were fought, the outcomes of which ultimately led to the establishment of Constantine and Licinius as Co-Emperors of Rome. For Christianity, this became a monumental victory as the co-emperors expanded on the policy of religious tolerance by ordaining restoration, and liberty, for Christians. Through the Edict of Milan, Constantine and Licinius returned and restored previously confiscated churches and property to the Roman Christians. The emperors also declared the removal of all previous impositions against Christians while granting them “free and unrestricted ability to attend their own worship.” The Edict of Milan represents a turning point in the religious history of Rome by marking the first instance of religious liberty across the entire empire. While Galerius’ edict exemplifies religious tolerance by still requiring Christians to recognize imperial authority, the Edict of Milan, on the other hand, advocated (rather than tolerated) true freedom of worship.

After obtaining their freedom to worship throughout the empire, Christians experienced one of the final affronts against their religion at the hands of Roman emperor, Julian. Converting from Christianity to the conventional Roman religion early in his life, Julian ascended to the throne in 361 CE and reigned for a brief two years. His pro-Roman position can be juxtaposed against his anti-Christian policies, such as his order that “no Christian should be a professor for the teaching of liberal studies.” Julian believed that Christian scholars distorted long-established Roman literature, exemplified by their preaching of the impiousness of ancient writers such as Homer or Hesiod. While Julian was clearly not fond of Christianity, he did not go so far as to enact an empire-wide persecution of Christians and attempt to destroy the religion. Once again, similar to the “persecutions” of Decius and Valerian, the main objective behind Julian’s policies was to enhance the spread of the Roman religion, which can be seen in his efforts to imitate Christianity’s high level of organization within the Roman churches. During Julian’s short reign, his actions embody a form of tolerance held by Romans towards religions not of their liking.

Through the utilization of a variety of sources, and the acknowledgment of accompanying bias for each source, it becomes clear that the religious attitude of the late Roman Empire was not as definitively intolerant as the traditional Christian narrative claims. The extent to which Romans displayed tolerance towards non-Roman religions was in constant variance and often dependent upon outside or exterminating factors. By defining tolerance as being able to coexist with one’s religion, and not attempting to eradicate it, the Romans of the late empire more often than not exhibited such tolerance. The Romans’ emphasis on spreading their religion, rather than destroying Christianity, unveils how Roman societies displayed considerably more religious tolerance than previously believed. This recognition of Roman tolerance becomes significant within the context of historiography as it embraces the notion of analyzing how history is written. By recognizing that many of the primary documents recovered from the late Roman Empire were recorded by Christian authors, it becomes crucial for modern historians to account for the particular historical bias within each surviving work from the period. Studying
the full scope of data surrounding the religious tolerance of the late
Roman Empire allows for a history of the period to be assembled, on
evidence, that challenges the traditional narrative of endless perse-
cuctions against Christianity at the hands of the “intolerant” Romans.

Bibliography

Cyprian. Epistle.
https://www.andrews.edu/~toews/classes/sources/early/
Cyprian%20Epistles.htm

Eusebius of Caesarea. Ecclesiastical History. Translated by Jeremy

Eusebius of Caesarea. Martyrs of Palestine.
http://people.ucalgary.ca/~vandersp/Courses/texts/eusebius/eusebius/eusempaf.html

Herodian. History of the Roman Empire. Translated by Edward
C. Echols. https://www.livius.org/sources/content/herodi
an-s-roman-history/

Historia Augusta. Severus Alexander.
http://penelope.uchicago.edu/Thayer/E/Roman/Texts/His
toria_Augusta/Severus_Alexander/3*.html

Julian (Flavius Claudius Julianus). Letter 36.

Lactantius. On the Deaths of the Persecutors.
https://people.ucalgary.ca/~vandersp/Courses/texts/lac
tant/lactperf.html

Michigan Papyrus No. 158; AD 250.

Orosius. Historia Adversus Paganos.
http://www.attalus.org/latin/orosius.html

https://www.documentacatholicaomnia.eu
/03d/0490-0510_zosimus_historia_nova_green_and_chap
lin_AD_1814_EN.pdf
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Learning and Confidence in 2D and 3D Medical Image Search

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Abstract

Humans search for specific targets in complex scenes to navigate the world. This ability to search is integral to survival in many ways, from its most basic role in hunting and gathering to its more advanced application to the detection of medical conditions in the field of radiology. According to previous research, the ability to search efficiently in a visual task can be learned over time. Despite sufficient evidence, in this paper, we recognize numerous findings that support the presence of greater learning and confidence curves in 3D versus 2D image search. The study of such learning patterns is important to the field of medicine as we hope to train radiologists to be as efficient, accurate, and confident as possible.

Introduction

Humans use visual search daily for survival and to navigate the world. Visual search is the act of searching for a specific target in a complex scene (i.e., finding food, avoiding predators, recognizing safe places, etc.). When performing visual search, people search the environment around them until they detect the target that they are looking for. In the field of radiology, medical image search is used to identify or rule out abnormalities that aid in the diagnosis of various medical conditions, such as the detection of malignant growths to confirm or deny the presence of cancer. Thus, medical image search proves to be an invaluable tool that enables medical professionals to save lives. However, searching in this type of imaging modality requires heavy training before one is able to efficiently search and recognize what the target looks like.

According to previous research, the ability to search effectively and efficiently in a visual task can be learned over time [1, 2]. These findings extend to radiologists’ searches for cancer nodules in medical images. It has been shown that long-time radiologists tend to have lower recall rates than radiologists that have worked for less than three years [3], and newer radiologists demonstrate improvements in their false-positive rates over time [4]. As training and experience are gained, confidence levels in performance also improve [5].

When applying learning curves, efficiency rates, and confidence levels to radiology images, it is important to also consider the differences within the types of images analyzed. The search strategies employed in both two-dimensional full field digital mammography (FFDM) and three-dimensional digital breast tomosynthesis (DBT) are fundamentally different [6]– although they are both used to identify possible breast cancer causing nodules. Despite this difference, performance in DBT and FFDM has indicated no significant differences [7]. However, more evidence reveals that searching in three-dimensional images leads to an increase in accuracy within the true positive rate in DBT compared to FFDM [8, 9]. Application of these differences to learning curves have not been extensively studied, but a recent study showed that within-radiologist learning can occur in DBT [10], displaying potential for the demonstration of learning curves in medical images. Given that these image types are used to identify breast cancer agents, understanding the disparities in their learning curves, efficiency rates, and confidence levels is an area of interest for our research.
The goal of this paper is to analyze the impact of learning on correct cancer nodule identifications in both two-dimensional and three-dimensional medical images and its subsequent effects on efficiency and confidence levels. We hypothesize that, as learning occurs, the percent of correct identifications will increase, along with the efficiency of each search and the participants’ confidence. We believe these findings will occur more notably in three-dimensional images compared to two-dimensional images.

Materials and Methods

Participants

Participants in this study consisted of 11 students from the University of California, Santa Barbara. There were 8 female and 3 male participants between the ages of 20 and 23. All participants received school credit upon completion of the experiment and academic quarter and were provided informed consent. Participants had verified normal or corrected-to-normal vision.

Stimuli

Two different types of signals were utilized in the experiment: masses and microcalcifications. The masses consisted of a 2D/3D Gaussian blob with a standard deviation of 10 pixels/voxels (roughly 2.6 mm). The microcalcifications consisted of a sharp, defined sphere with a 6 pixel/voxel (roughly 1.56 mm) diameter. Additionally, the microcalcifications had constant contrast equal to the maximum contrast of the mass (Figure 1). In the 2D/3D images, the signals were present in 50% of the trials in random locations on a generated noise field, while the other 50% of the trials did not have a stimulus present. Of the trials with a stimulus present, 50% of the trials asked the participant to look for a mass, and 50% of the trials asked the participant to look for a microcalcification. The background of the stimuli was generated with a 2D/3D correlated Gaussian noise field that resembled the noise present in medical breast mammograms [11].

Design and Procedure

This between-subjects experiment consisted of 800 trials per participant (400 for 2D, 400 for 3D). The manipulated variable was the type of stimulus present or non-present in each trial: mass-present, mass-non-present, microcalcification-present, and microcalcification-non-present.

All the participants individually entered the testing room, where they were directed to a table that included a chinrest, two monitors, and a computer mouse. The chin rest was adjusted to a comfortable setting, allowing the eye tracker to track eye movements with greater ease. Two monitors were used for the experiment and placed side by side. The monitor on the left controlled the eye tracker, as well as recording and saving eye movements throughout the study. The monitor on the right was a medical-grade monitor calibrated linearly (Barco MDRC 1119) that presented the different stimuli in the trials.

Participants placed their chin on the chin rest and verified that the eye tracker was tracking only the right eye. Next, participants opened the program on MATLAB, calibrated the eye tracker, and validated it, ensuring accurate and precise tracking. The light was turned off, and participants were instructed on how to use the mouse and its jog wheel to navigate the trials. After a short round of practice trials, and when participants demonstrated understanding, they pressed the escape key to start the experiment.

Participants alternated between 2-dimensional and 3-dimensional search modalities. At the beginning of each trial, they maintained gaze at the center of the screen through forced fixation and initiated the start of the trial by pressing the spacebar. The participant then scanned the image to determine whether a mass or microcalcification was present. Each trial was target-specific, meaning that participants knew whether they were to search for a mass or microcalcification before the start of each trial. If the stimulus was present, participants pressed the spacebar and further denoted the confidence with which they believed the target to be present via a confidence rating of 5 to 8, 5 being the lowest confidence and 8 being the highest confidence. If the participant believed the target to be absent, they would rate their confidence that the stimulus was absent through a confidence rating of 1 to 4, 1 being the highest confidence, and 4 being the lowest confidence. They were provided feedback with the correct answer and, in the case of a present trial, the location of it. Figure 2 shows an example
of the timeline for one trial.

Figure 2. A single trial’s visual timeline in the experiment, including calibration, primary fixation, noise field search, confidence rating, and revealed present target.

The 3-dimensional trials required the participants to scroll through a “stack” of images using the mouse’s wheel to scroll through different slices of the volume while attempting to locate the specified mass or microcalcification. Participants followed the same procedure used in the 2-dimensional trials to terminate the trial and respond.

Figures of Merit

Proportion correct (PC) was calculated as follows: PC = (TP + TN)/N, where TP stands for the number of true positives, TN stands for the number of true negatives, and N represents the total amount of trials attempted. Trial time is the amount of time that it took the participant to confirm or deny the presence of either a microcalcification or a mass within a given trial. The trial time duration was measured, in seconds, from the start of the stimulus display until the participant ended the trial by hitting the spacebar. Efficiency was calculated as the ratio between PC and trial time: PC/Trial Time.

Results

Figure 3 depicts the proportion of correct trials (averaged across 11 participants) for each of the 400 trials attempted. In both 2D and 3D images, it appears that participants can more accurately identify or reject the presence of a microcalcification than a mass, regardless of trial number. While this accuracy disparity is present in both types of images, it is only significant (p<0.05) in 2D images, as depicted by the presence of dots in Figure 3a. In the 3D search, it appears that this accuracy disparity between stimuli lessens with an increasing trial number, as illustrated by the lack of dots in Figure 3b. More so, nearly every set of data points is significantly different from one another in the 2D images, while for the 3D images, not a single set of data points is significantly different from its partner. For both types of images, PC increases with the trial number. In the 2D search, it appears that PC for both microcalcifications and masses increases until about trial number 30 and 50, respectively, after which it begins to plateau. In 3D search, the PC for both microcalcifications and masses appear to increase significantly within the first ~50 trials, as also seen in 2D search. However, 3D PC seems to gradually increase with the trial number instead of plateauing like 2D PC.

With regards to accuracy (PC), for both 2D and 3D images, it appears that microcalcifications consistently present a higher proportion correct (PC) than masses do, regardless of trial number. This suggests that people are perpetually better at correctly identifying or rejecting microcalcifications over masses. In alignment with previous literature, this finding supports the notion that there are discrepancies between 2D and 3D search accuracy. The gradual increase in 3D PC over growing trial numbers indicates that participants become better at correctly identifying or rejecting both microcalcifications and masses in 3D as time goes on. In the case of 2D images, the PC for microcalcifications and masses plateaus around trial numbers 30 and 50, respectively, meaning that participants do not get any better or worse at correctly identifying or rejecting microcalcifications or masses in 2D after this point. These findings support our hypothesis of a greater 3D learning curve and reinforce the existence of modality-specific learning curves with regards to the medical image search. The abundance of “dots” on the 2D plot demonstrates that participants are consistently and significantly better at correctly identifying microcalcifications over masses in 2D. This is not the case in 3D, as this plot contains no dots. Furthermore, it is apparent that participants are better, and nearly perfect at correctly identifying microcalcifications in 2D rather than 3D, as indicated by their respective accuracy percentages of around 96% and 85%. The opposite appears to be true for masses, with relative 2D and 3D PC percentages of around 73% and 78%. These disparities are more examples of
how there are distinctive patterns of improvement dependent on search modality. These effects were not seen when absent only trials were analyzed.

Figure 4 shows the amount of time (averaged across 11 participants) that it took to confirm or deny the presence of either a microcalcification or a mass within a given absent trial. For both types of images, it appears that microcalcification trial time is consistently higher than that of the masses, regardless of trial number. This disparity is more significant in 3D search, especially in the final quarter of trials, as depicted by the abundance of dots in this section of the plot. Overall, trial time is greater in 3D images than in 2D images. In both types of search, trial time appears to decrease with a rising trial number.

Figure 4. Trial time versus trial number for (a) 2D and (b) 3D search, using only absent trials. These curves represent the average of all 11 participants for both microcalcifications and masses. Shaded areas are standard errors of the mean. The dots in the plots show which set of data points are significantly different from each other (p<0.05).

In studying trial time, we see that the amount of time spent analyzing a 3D image for a microcalcification begins to separate significantly from the amount of time spent searching for a mass in the final quarter of trials—a larger amount of time spent on trials in which the participant was prompted to search for a microcalcification. This finding illustrates how participants can more quickly recognize the presence or absence of a mass over a microcalcification during a 3D search. This disposition further supports our hypothesis of a larger 3D learning curve and illustrates the presence of stimuli discrepancies within the same image type. The increased amount of visual data that is processed in 3D compared with 2D images is thought to be the reason why participants spent much less time searching through 2D images than 3D images. For both image types, regardless of stimuli, trial time decreases slightly as the trial number increases, suggesting that participants get more confident and comfortable with identifying both microcalcifications and masses as time goes by. These effects were not seen when all trials were analyzed.

Figure 5 illustrates the efficiency (averaged across 11 participants) for each of the absent trials attempted by the participants. Overall, efficiency is higher for 2D search (~16%-18%) than 3D search (~3%-6%), regardless of stimulus type. In the 2D images, it appears that there is no efficiency discrepancy between microcalcifications and masses, as illustrated by the absence of dots in Figure 5a. However, in 3D search, it appears that mass efficiency is greater than microcalcification efficiency, as depicted by the increased number of dots in Figure 5b. This efficiency disparity appears to increase around trial number 67 as mass search efficiency begins to rise and separate significantly from microcalcification search efficiency. In both 2D and 3D search, efficiency increases with the trial number.

Figure 5. Efficiency versus trial number for (a) 2D and (b) 3D search, using only absent trials. These curves represent the average of all 11 participants for both microcalcifications and masses. Shaded areas are standard errors of the mean. The dots in the plots show which set of data points are significantly different from each other (p<0.05).

When we study efficiency, it appears that for 3D images, participants are almost always more efficient at accurately identifying masses over microcalcifications, regardless of the trial number. This is not observed in the 2D images and suggests that participants are more efficient at searching for masses over microcalcifications when they are searching a 3D image but not when they are searching a 2D image. This finding further supports our hypothesis of a larger 3D learning curve and emphasizes earlier results that these learning patterns can not only be image-specific but also unique to the stimulus found within a given image type. For both the 2D and 3D images, it appears that overall efficiency gradually increases and eventually plateaus as the trial number increases. This finding indicates that participants get more effi-
cient at correctly identifying both microcalcifications and masses as time goes on, suggesting the presence of a learning process in both search modalities. When comparing 2D and 3D images, it is evident that overall efficiency is much higher for 2D search—meaning that participants are much more efficient at correctly identifying both microcalcifications and masses in 2D rather than in 3D. This data aligns with previous literature in supporting the notion that there are mode-specific learning curves as well as discrepancies between 2D and 3D search accuracy. These effects are better observed when analyzing absent only trials.

Figure 6 illustrates the confidence with which participants identified or rejected the presence of a signal as a function of trial number. The average of all 11 participants for each of the 400 trials attempted are analyzed in this figure. For the 2D microcalcification search, it appears that the 8 rating is consistently high throughout all 200 trials and that the amount of 2 ratings increases with the trial number. Additionally, it appears that the number of 3 ratings decreases as the trial number rises. For 2D mass search, it appears that the 1 and 4 ratings increase with trial number while the 6 rating decreases with the trial number. For the 3D microcalcification search, it appears that the 3 and 8 ratings increase with trial number while the 4 and 5 ratings decrease with increasing trial number. For 3D mass search, it appears that the 1, 4, and 7 ratings increase with trial number while the 5 and 6 ratings decrease with a rising trial number.

The final analysis focuses on confidence ratings for both stimuli identification and stimuli rejection as a function of trial number. (Figure 6). In the case of 2D microcalcification search, the results suggest that participants are consistently confident in their ability to correctly identify a microcalcification in a 2D image. Additionally, it appears that with a rising trial number, participants become increasingly more confident in their ability to correctly reject the presence of a microcalcification. It is important to denote that, although the data shows increasing signs of improvement, the number of 1 ratings did not increase significantly with the trial number. This means that participants become more confident in their ability to accurately identify rather than reject the presence of a microcalcification in 2D as time goes on. When analyzing the confidence ratings for 2D images containing masses, it appears that participant’s confidence in their ability to correctly reject the presence of a mass increases with time. This finding is opposite of that seen for the 2D microcalcification search, suggesting that as participants spend more time searching in 2D, they become more confident in their ability to correctly identify a microcalcification and reject a mass. Cohesive with the findings concerning 2D PC and efficiency, it is apparent that for 2D search, as participant confidence increases, so does their accuracy (PC) and efficiency.

When analyzing 3D images containing microcalcifications, it appears that as participants spend more time in 3D search, they become more confident in their ability to correctly identify the presence of a microcalcification. When analyzing 3D images containing masses, it is apparent that with increasing trial numbers, participants become more confident in their ability to both correctly identify and reject the presence of a mass. However, as mentioned above, it is important to note that although the data for 3D mass search shows increasing signs of improvement, with more time spent in 3D search, participants become more confident in their ability to accurately reject rather than confirm the presence of a mass. Cohesive with the findings concerning 3D PC and efficiency, it is apparent that for 3D search, as participant confidence increases, so does their accuracy (PC) and efficiency.

Overall, this study of confidence ratings suggests that regardless of image type (2D or 3D), participants become more confident in their ability to correctly identify the presence of a microcalcification and reject the presence of a mass as time goes on. Additionally, it appears that the noise present at the beginning section of trials dissipates with increasing trial number, hence the smoother lines. This alludes to the notion that as trial numbers increase, participant’s ability to habituate to the search process and the use of the confidence scale increases as well. We believe this
to be yet another measure of learning that participants express. With respect to all of these results, it is clear that as participants learn (increase their proportion correct and efficiency), their confidence increases as well. These results not only support our hypothesis but also complement our previous findings in upholding the notion that there are discrepancies between 2D and 3D learning curves. Through this study of confidence ratings, we were able to illustrate that these differences go beyond accuracy, efficiency, or trial time and include other aspects of image search such as confidence.

**Conclusion**

While the evidence is not sufficient enough to fully reject or accept our hypothesis, there are some findings to support the notion of a greater 3D learning and confidence curve. When looking at efficiency, we observe that participants learn how to search for masses in 3D more so than they do in 2D. Furthermore, when comparing accuracy, we observe that the learning process in 2D image search is reduced to ~50 trials while the 3D learning process continues throughout all 200 trials. Additionally, when comparing confidence ratings, it appears that with time participants become more confident with 3D image search rather than 2D image search. This demonstration of a larger 3D learning curve supports previous literature in upholding the notion that there are accuracy differences between search modalities as well as modality-specific learning curves. Furthermore, there is evidence that efficiency and confidence, for both types of image searches, appear to be affected by the type of cancer nodule being searched for. However, our findings make it clear that 2D search efficiency exceeds that of 3D search, regardless of stimulus type.

While this study was limited by small sample size, a sample of untrained medical professionals, and inauthentic noise generated 2D and 3D mammograms, this experiment illustrated that there are disparities in efficiency and confidence between 2D and 3D medical image search and that more research is needed to fully understand the extent and possible cause of these differences. This incorporation of confidence ratings to the study of modality-specific learning curves leads us to wonder if there is a definitive relationship between the two. Exploring the details of this relationship with regards to what is already known about both search modalities is a possible area of future research. Understanding the logistics and differences between the ways in which people learn to search both 2D and 3D medical images holds true importance as it may shape the way medical professionals in the field are trained.

With a deeper knowledge of the mechanisms that make 2D and 3D medical image search different from one another, we hope to train future radiologists to be the most efficient, accurate, and confident as possible so that they can better diagnose, treat and care for their patients.
References


About the Author

Maren Smith is a fourth-year Biopsychology major who is graduating this spring. Outside of the classroom, Maren is a medical scribe at Cottage Hospital and plays on the Women’s Club Soccer team. After UCSB, she plans to pursue a career in medicine.
"Speak Now: The Power of Words in the Lays of Marie de France"
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Abstract
The idea of chivalry came about in the Anglo-Norman period of medieval history and is understood to be a complex code of rules for behavior. One of these rules was to respect women. Furthermore, in many literary texts of the period, when a chivalrous gentleman hopes to offer love to a lady, he is expected to devote his entire life to his beloved. This would lead some to believe that chivalry gave women influence over their male counterparts during the medieval period. In this project, I analyze how the chivalric code gives or denies women power and agency in the texts of Marie de France.

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Medieval literature romanticizes the image of chivalry; the gallant, courageous knight rescuing the beautiful, courteous lady. But what is the true story behind this fairy tale? Twelfth-century writer Marie de France explores the problematic conventions of chivalry in her lays (short romances written in verse), which focus on medieval nobility who, theoretically, live by the chivalric code. However, Marie challenges this concept by exposing the reality behind the fiction. According to her, the power of “chivalry” is really the power of words: saying the right things, having a good title, and presenting oneself in the best light are the best routes to success. Often these words are empty promises made by men for personal gain. Chivalry itself was nothing more than a series of valued traits drawn from a variety of literary sources and compiled together to form the ideal models of nobility. Therefore, the only power a woman has through “chivalry” is by using language to her own ends. In her lays, Marie de France features both women who know how to navigate society using language and those who are inept at it. In the first half of this essay, I will argue that the knights and kings in three of Marie’s lays, Le Chaitivel, Equitan, and Lanval, draw their power from language rather than from upholding the chivalric code. In the second half, I will further observe these three texts to demonstrate the influence language can give a woman in feudal society, which is characterized by a hierarchy of men in the roles of servants, knights, and lords. Firstly, I will show how the lady in Le Chaitivel is an expert in using language to her advantage. Secondly, I will demonstrate how the lady in Equitan tries to deflect men with words but fails. Finally, I will discuss how the fairy mistress in Lanval is an outrageously unrealistic character, demonstrating how her assets are not a real way for a medieval woman to achieve power. Women have spent most of history trying to ascertain themselves in a world that until recently has been dominated by men. Seeing how women expressed themselves and exercised power at a time where it is commonly assumed they were at their worst educates and inspires women trying to assert themselves today. Living in a world where the system is designed to work against you, open rebellion does not always have the desired effect. The women in the lays of Marie de France show society for what it is, not as perfect nobility, however, “each one sought her for himself,” revealing that they only want to possess the lady and have sex with her (Le Chaitivel 45). In the second lay, Equitan, the title character is said to be “of great renown” and “very courtly,” but he consistently abandons his duties as king throughout the lay and has an affair with his seneschal’s wife (Equitan 11 & 13). Despite the implication that he is a chivalric leader because he is “very courtly,” Equitan is lazy and disloyal and these benevolent qualities the text gives him are only words. Similarly, in my final lay, Lanval, the title character expresses little interest in performing the duties of a knight. Lanval has become unpopular and poor in Arthur’s court and while the text suggests Lanval’s poverty is not entirely his fault because jealousy of his supposed virtues has made him unpopular but goes on to say that he does not “ask [the king] for anything” (Lanval 32). This implies that Lanval makes no effort to advance himself and that he would rather spend his time alone. Even after he has regained regard in society thanks to the patronage of fairy he found in the country who became his lover, he remains uninterested in playing the part and only wants to be alone with his fairy mistress, as “the joy of others he values little / if he does not have what pleases him” (Lanval 258-259). This quote shows Lanval does not care about entertaining and being a good host; he only cares about his lady. Being a patron and host was an important part of feudal society because “men deprived of wealth and status by the rigid hierarchies...[could] still attain both through gifts...from more powerful men” and while Lanval does participate by giving gifts, he cares little for any of his clients (Finke & Slichtman 35-36). In this way, the lays Equitan and Lanval are similar, because the narrator calls the title character good and noble, saying that he has all the characteristics the medieval literary canon attributes to a chivalrous knight, but their actions suggest that they have no desire to be this character. Through the men in these texts, one can see how the men in Marie de France’s writing fail to live up to their reputations, which are nothing more than words.

While men rely on empty flattery, women must use words differently in a time when “law discriminated against them, adjudging their testimony inferior to that of men” (Mundy 138). Marie’s lay Le Chaitivel, ou Quatre Dols, is about a beautiful lady who is courted by many suitors and must decide for herself who to marry.
as she has no family mentioned who may influence her decision. This text features a woman who answers to no father or husband and uses language to manipulate her peers. She is independent of male power, but is also the ideal courtly lady, “of great worth / in beauty and learning / and in every good behavior” (Le Chaitivel 10-12). She matches the stereotypical image of a noble woman, beautiful and charming, who watches men fight from “up on a tower” (Le Chaitivel 109). The woman in the tower, separate from the men, was the image of the ideal courtly woman (Bumke 335). However, despite being courtly society’s “perfect” woman, this lady is not confined by her public image, but uses it to her advantage. Marie calls her “of great worth in...learning” and not just in looks to demonstrate how this woman is educated and intelligent, not just the empty headed object of a man. The lady is courteous towards her suitors, but their empty words do not affect her. For example, a frequent claim made by medieval lovers is that if they are refused by a woman they will die of heartbreak. Some women in medieval literature feel obligated to love a man in order to save his life, but this lady rejects this notion with words of her own. She does not “wish to kill [her suitors],” so she flatters and rejects them skillfully instead of being coerced by their claims (Le Chaitivel 18).

This passage demonstrates her methods of using or not using language to deflect unwanted suitors. She does not insult them but respects them, thanks them, and when they have been complimented enough, sends them away. Furthermore, the lady is not a victim to pledges of love even when she is attracted to a suitor. When she considers her four preferred lovers, she “[is] very sensible: / she [takes] time and careful thought!” instead of acting impulsively (Le Chaitivel 49-50). She is one of the few who follows the advice of having “sense and moderation in love,” evoked in a different lay of Marie’s (Equitan 17). The lady retains her power because she knows how to politely deflect men and what words to take seriously.

This woman refuses what men want and what she “must” do. Heather M. Arden argues that the women never get what they desire in Marie’s lays because “a masculine solution replaces or re-writes the feminine one...in all of them,” but she does not appreciate the subtext of La Chaitivel (61). For example, it is expected that the lady choose between her four suitors. However, even though she never picks one to be her husband, she retains her status as a respectable lady but sacrifices nothing. The lady gets what she wants because she gets to “love” all the knights, but none of them ever have her as a lover. When her four suitors compete in a tournament to try and impress her and all but one are killed, the surviving knight is literally “carried to [the lady’s] chambers” to recover, but they do not consummate the relationship (Le Chaitivel 165). This demonstrates how the lady has the men in the position of lovers but does not give up anything in return. Furthermore, the lady claims authority over the title and the lay itself. When she decides to write the lay, she wishes to call it Quatre Dols, or Four Sorrows, making her experience of loving and losing four men the focus. However, the remaining knight tells her to call it Le Chaitivel, or The Wretched One, because of his misfortune to love a woman who he can never have physically and who still loves his late companions. This practice of having one title reflect the masculine perspective and one the feminine appears multiple times in Marie’s collection of lays. Her lay Elduc, so named for the male protagonist, is also called Guidelœuc et Guilliadun for the two principal female characters. The usage of the masculine title as the primary one is an example of how Arden believes “it is clearly the male lover who determines the significance of the adventure lived by the lovers” (61). However, while the lady in Le Chaitivel agrees to call the lay by the knight’s title, the text adds that “Some of those who would tell it abroad / call it Four Sorrows,” demonstrating that even though the knight tries to claim the text through the title the lady’s perspective is not forgotten (Le Chaitivel 233-234). Furthermore, because the lady is the one who has written the lay, it is truly a story about her feelings and perspectives. By calling it Four Sorrows, she shows through language how she never chose between her four lovers, not even in death; therefore, she has everything despite what the men wanted of her.

While the lady of La Chaitivel is an expert of language, the one in Equitan demonstrates the dangers of taking men’s words seriously and using words improperly. In this second text, Equitan is a king who lusted after the wife of his seneschal, a knight who serves him. The narrative of Equitan and the lady’s forbidden love affair demonstrates the power of such words, but only if used in a certain way. While the previously discussed character in Le Chaitivel maintains her appearance of a gracious woman who must be respected by treating all of her suitors with courtesy, Equitan’s lady’s first use of language is to diminish herself.

Since you are a powerful king and my husband holds his lands from you, you would expect, I imagine, to have dominion in love.
Love is not worthy if it is not equal (Equitan 133-137). When Equitan first confesses his feelings to the lady, she tries to reject his offer of love by saying she is not his equal because of class status and therefore their love would not be worthwhile. This demonstrates how she is not adept at spoken argument because this is a flimsy defense, easily deflected by empty words from Equitan, who promises “[s]he will by the lady and [him] the servan[t] / [her] the proud one and [him] the supplicant” (Equitan 175-176). She attempts to be diplomatic and respectful with her king by humbling herself to him but succeeds only giving him more power over her. The lady’s second mistake is taking these words and his claim that he will die if rejected literally. Again returning to the woman in Le Chaitvel, who is not affected by such words and makes decisions independently, while Equitan’s lover ultimately decides to give him her love because he “begged so many times for mercy” and she believed she was saving the life of her king (Equitan 178). Despite the promises he makes to be her “servant,” the relationship is one where she serves him. When they plan to do away with her husband so they can marry, it may be interpreted that he assisted in the attempted murder on the seneschal to please her. However, Equitan is the one who originally suggesting to the lady that “[i]f [her] lord were dead, / [he] would make [her] queen and lady” (Equitan 226-227). She immediately takes up this idea and promises to “quickly arrange / for her husband’s death” as a service to him (Equitan 233-234). Heather M. Arden agrees that Equitan demonstrates male dominance over women because not only does the lady submit to her lover’s wishes, she is punished in the end by her husband, when he kills both her and Equitan for their infidelity (62). The lady does not use language to promote herself and therefore puts herself into a relationship where her lover merely wishes for something and she does everything possible to have it come to pass.

Furthermore, the lay Equitan also shows the dangers of wishing for something and having these words backfire. According to R. Howard Bloch, Equitan and another of Marie’s lays, Le Fresne, resemble each other in that they both feature “an almost fatal speech act” coming back to haunt the speaker (76). In Le Fresne, the title character’s mother “slanderously accuses a neighbor of adultery for bearing twin children...[b]ut when she herself bears twins, she realizes she has brought about her own disgrace” (Hanning & Ferrante 88). Likewise, the lady and Equitan wish for the death of the seneschal so that they do not have to hide their affair. These words turn on them when their plan fails, and they instead are killed. This is another example of how Equitan’s lady is ignorant of the true power of words and how to use them correctly; she only wishes ill on others and lowers herself. She could have gained power from this situation if she had used language differently. For example, Marie’s text implies that the seneschal is the true king in everything but name, because Equitan neglects his duties in favor of pursuing the lady and other pastimes. Robert Hanning and Joan Ferrante go as far to say that the king and the seneschal have traded places because the seneschal has “assumed a good part of the burdens of kingship” while Equitan “[as-sumes] part of the burden of his wife” by being her lover (71). The lady could have gained status by refusing Equitan because if he had made good on his promise and “died,” she would have become queen, her husband being the obvious heir. She also could have exchanged tokens with him but refused to love him physically, as the lady in Le Chaitvel did with her four suitors. In this scenario, Equitan would be occupied with pursuing her and her husband would continue to administer justice to the land, making her the queen in practice if not in name. She also could have simply refused to love Equitan if her husband was not dead and let the two men fight each other for her favor. Regardless of which man survived, she would have been made queen after. However, the lady views herself as below Equitan because he is the king, so she does not see any of the other avenues to exercise power over him and her husband through language.

While Marie demonstrates how Equitan’s lady fails to use language, she also creates a fantasy woman who does not use language at all in Lanval, the third of my chosen lays. Lanval, a lonely and impoverished knight, meets a fairy sorceress in the country one day who becomes his lover and benefactor. Lanval’s fairy mistress is outrageously wealthy, beautiful, and has no boundaries to her power. All her power comes from physically and materially, but because she is such an impractical character, the text appears to be demonstrating how women’s power does not come from physical objects because no woman such as this can exist in reality. Her wealth is beyond anything in the real world; just the cords and stakes that “held the sides of the tent; / no king under heaven could buy them / for any wealth he might offer” (Lanval 90-92). The description of her wealth goes on for some time, referencing several famous rulers who cannot match her, in order to illustrate how fantastically rich she is. The following is just a small excerpt from the long description of her camp when her and Laval first meet.

Not Queen Semiramis, when she had her greatest wealth and greatest power and greatest wisdom, nor the emperor Octavian
could have bought the right flap (Lanval 82-86). She is completely unrealistic because her riches outmatch any royalty in the world but has no clear source. Furthermore, she consistently uses her body as a conduit of her power rather than saying anything intelligent. When she first meets Lanval she is dressed “in nothing but her shift!”—much more scantily than most female figures in medieval literature (Lanval 99). When she comes to Arthur’s court for Lanval’s trial for insulting the queen, “she let her mantle fall / so that they could see her better” (Lanval 605-606). She literally throws off her clothes so that her body is visible as a testament of Lanval’s honesty about her beauty. Marie seems to be suggesting that it would only be possible for women to have this kind of power over men if they are impossibly wealthy and supernaturally beautiful. Because these traits are impossible expectations of a woman one can conclude that the power demonstrated by the fairy mistress is not meant to be a realistic representation of a medieval woman. She is a direct contrast to some of Marie’s other female characters who use language as a means of power. These women are more accurate representations, because they exert control using something actually at the disposal of women in reality.

Unlike men, women in medieval society could not win favor through shows of strength, limiting them to either sexuality or language. Laurie A. Fink and Martin B. Shichtman argue that any influence a woman could gain through sexuality only makes her “a conduit for her husband’s patronage,” or his ability to influence the lives of others, therefore she is still not the dominant figure (38). Marie, however, sees the power and value of language as something that can be entirely her own. This is why she famously declares herself as the author in the epilogue to her fables: “I will name myself for remembrance: Marie is my name; I am from France” (Bloch 2). By claiming her works as her own and leaving no room for doubt: any effect or influence these words have in the world belong entirely to her. Marie also strives to take control over the meaning of her writing. The plot lines of her lays come from other sources, but she retells them in her own way which suggest “a deep desire...over meaning, over intention – over words” (Bloch 51). She takes stories she has heard during her life and writes with more focus on certain characters or events. Furthermore, she “manipulates traditional literary codes” to feed her “desire for independence within the male-dominated feudal system” (Guy-Bray 56). For example, a common trope in medieval lays in general is that the story ends with the consummation between the principal lovers, but in Le Châtelier, Marie makes a point of stating that the knight will never have the lady as a lover (Guy-Bray 58-59). Furthermore, Marie also writes of an obligation to speak in the prologue to the lays.

One whom God has given knowledge and good eloquence in speaking should not keep quiet nor hide on this account but rather should willingly show herself (Prologue 1-4).

Marie’s belief in the power of language goes so far to say that one must speak. If they have the power to change people with words, they must do so. In this passage, she also specifies that one should show “herself.” By using a feminine pronoun here, she again alludes to the power that words give women specifically, herself included. Her assertiveness of her own power is something that was essential to women in the middle ages as still is today.

In conclusion, the power and influence available to women is very complex in the lays of Marie de France. The genre of her writing, the setting in which they take place, and the class of people they focus on all would normally mean her characters adhere to chivalric values. However, she shows the realities behind these assumptions. The concept of a knight offering his love to a lady and promising to be her servant and fulfill her every wish would suggest that the lady is the one in power in the relationship, but the complexities of spoken word challenge this. If men say whatever is necessary to get a woman into bed, women in turn will learn how to see through their words and manipulate language for themselves. Women found many ways to manipulate the literary code during the medieval era so they could present their thoughts in written works, including taking control over texts from male authors by acting as translators (Barratt 11). Everyone grows up seeing the image of the knight in shining armor coming to save the beautiful princess in the tower from Disney films, but learning the origins behind these tales reveals a not-so-simple reality. Snow White lived happily ever after, but there is so much more for women to learn to achieve their goals. Learning to speak for oneself is an essential skill for a woman, both in modern and medieval society.
Works Cited


About the Author

My name is Abigail Stevens and I am a second-year honors English and French double major specializing in medieval literature. I am planning on attending graduate school to earn my PhD in medieval literature after UCSB. I hope to do more research on women in medieval literature in the future as well as work on Arthurian literature.
The Myth of Neutrality: U.S. Implication, the Kashmir Insurgency, and the American Public Sphere

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Abstract
This research will argue for the historical significance of interconnectedness between the United States and Kashmir by using military aid archives, government records, and intellectual history. Together they provide the context needed to dispel the myth of the United States’ neutrality and reveal how Kashmir’s existence in American public life predates Indian Prime Minister Modi’s revocation of Article 370. Additionally, the guise of neutrality hides the impact of the United States’ military investments before and during the Kashmir Insurgency, even when the developments in Kashmir distinctly shaped debates in the United States public sphere.

In August 2019, Prime Minister Modi’s revocation of Article 370 of the Indian constitution was at the forefront of mainstream politics and news in the United States. Article 370 was written after the creation of India and Pakistan to give autonomy to the Indian state of Jammu and Kashmir and limit the power of India’s central government over the territory. The revocation propelled Kashmir into public discussions in the United States, as Americans who had never heard of Kashmir and the struggles of Kashmiris were moved by their fight for independence and autonomy. Kashmir became a new cause that American progressives and leftists deemed worthy of standing behind and many began to learn of the complex and violent history surrounding Indian and Pakistani claims to Kashmir’s territory. Even though it was not a new issue, Kashmir’s struggle for independence felt new — almost as if the revocation of Article 370 was the start of unjust violence, and not actually a continuation.

Publications flooded with think-pieces about the subject. Take Arif Rafiq’s “In Afghanistan and Kashmir, It’s the 1980s All Over Again” in Foreign Policy. Rafiq discusses the 1989 Kashmir insurgency, which was an uprising in response to the Indian government’s corrupt occupation of Kashmir. Rafiq says in the piece that the United States should leverage its working relations with Pakistan and India to “facilitate a diplomatic process to resolve the Kashmir dispute.” During and after the Cold War, American presidents have had a consistent policy on Kashmir. They have held that the dispute should be resolved bilaterally between India and Pakistan, with the United States maintaining a neutral position. In making the comparison between the 1980s and now, Rafiq foregrounds the history of violence and mistrust that shapes the current crisis. However, in essentially calling on the United States to finally intervene in Kashmir, Rafiq misses the point. If anything, both United States policy and public life have been intimately connected to Kashmir, and more specifically, to the 1989 Kashmir insurgency. Underneath the guise of neutrality, there exist more complex and consequential histories that, my research argues, must shape contemporary conversations in the United States around Kashmir. This essay will argue for the historical significance of interconnectedness between the United States and Kashmir by using military aid archives and intellectual history which together provide the context needed to dispel the myth and reveal how Kashmir’s existence in American
public life pre-dates the revocation of Article 370.

**Returning to the 1980s: Military Aid and Human Rights**

In the decade spanning 1984 and 1994, after Pakistan had gained substantial military resources from the United States, the connection between Kashmir and the United States transitioned from one of strategic distance into one of increasing interconnectedness. The 1989 Kashmir insurgency was a turning point, as it revealed that the United States was actually implicated in the violence, thus dispelling the myth of neutrality. The first form of implication was the United States’ direct relationship with, and military aid to, Pakistan. Declassified Central Intelligence Agency archives and American news coverage explain the mechanisms of how policy was decided in the context of military aid to Pakistan and how the military aid funneled through the Inter-Services Intelligence contradicts the United States’ alleged neutrality. The Inter-Services Intelligence is Pakistan’s largest intelligence service, and to this day is considered, by Pakistan’s Prime Minister Imran Khan, as the country’s “first line of defense.” During the Cold War, United States funding that enabled the Afghan opposition to the Soviet army in the Soviet-Afghan War shaped the Kashmir insurgency in 1989. The United States, in the 1980s, was less concerned with how funding the Inter-Services Intelligence would affect the stabilization of Kashmir, and more concerned with the politics of “spreading democracy” and defeating the Soviet Union. Between 1984 and 1989, the Reagan administration’s accommodation of Pakistan’s military interests paved the way for United States-made weapons and money to find their way to Kashmir. Months after Reagan was first elected, the United States agreed to give $3.2 billion in military and economic aid for the purpose of strengthening Pakistan’s defenses against Soviet troops in Afghanistan — by 1985, the United States had fully paid the aid package. In 1985, Reagan, despite knowledge of Pakistan’s production of a nuclear weapon, committed to providing $4.2 billion in aid to Pakistan over the following six years. According to Hussain Haqqani, the former Pakistani Ambassador to the United States, before the insurgency had even begun, a branch of the Pakistani fundamentalist organization Jamaat-e-Islami was allegedly active in Kashmir, and Sikh militants were being trained and funded in Kashmir by the Inter-Services Intelligence.

President Bush’s administration, between 1989 and 1993, differed from President Reagan’s approach, emphasizing a zero-tolerance policy on Pakistan’s support of terrorism. While the United States did continue to disburse $1 billion in economic assistance to Pakistan, Pakistan lost “approximately $300 million in annual arms and military supplies.” Although aid was suspended, it is important to note that Pakistan was still able to purchase military equipment from the United States until 1992 — the Los Angeles Times reported that year that the Bush Administration had “quietly permitted the Pakistani armed forces to buy American-made arms from commercial arms for the last year and a half.” Subsequently, President Clinton did not declare Pakistan a state sponsor of terrorism, and agreed to reimburse Pakistan for the storage of twenty-eight planes at an American airbase that could not be delivered due to the sanctions. The agreement involved both military aid and cash. The military aid, worth $358 million, would be “in the form of P-3 surveillance aircraft and TOW antitank missiles.” During the Bush administration, it became evident that the Pakistan government supported, whether officially or unofficially, Kashmiri independence, and by 1989, the United States began obtaining intelligence of the Inter-Services Intelligence’s role in the insurgency. While President Clinton was not responsible for disbursing significant amounts of military aid during his presidency, the effects of the actions taken during the 1980s unraveled throughout his term, and the exact authority of the Inter-Services Intelligence became apparent. In giving funds to the Inter-Services Intelligence, the United States has falsely claimed neutrality.

From the perspective of human rights activism and law, the tragedies that accompany the loss of human life due to state-funded violence is not a footnote or addendum to the history of nation-states or territories. Instead, they are the reason to view national histories in an alternative lens. A historical analysis on the United States’ relationship to Kashmir must include an archive on who bore the costs of violence. Balraj Puri, described as an “intellectual, a journalist, a social and political activist, a human rights crusader and a keen political analyst,” was on the frontlines of the Kashmir conflict in the 1980s and 90s. He helped negotiate government agreements and fought for progressive ideals, while interacting with Indian, Pakistani, and Kashmiri leaders. His intellectual work is critical to locating how human rights violations in Kashmir also implicated the United States. Puri’s life and actions are a window into the insurgency as he focused his energy on writing and consulting policymakers to reduce the levels of violence. He was deeply critical of the militants, security forces, and the Inter-Services Intelligence. Puri’s archive of the insurgency recorded events, people, and moments that have been neglected in the United States’ official documents, as the United States was focused on neutrality.
and strategic distancing when it came to the Kashmir dispute.

Before the rigged 1987 elections had even occurred, Kashmir was already on the road to insurgency. In 1983, after the Janta Party collapsed nationally, the Congress party emerged as a new opposition and was considered the “best organized and the most vocal channel for the expression of the people’s dissatisfaction against the government.” But it only ended up enforcing the same oppressive circumstances. Additionally, the Rajiv-Farooq Accord resulted in central aid being given to Kashmir only on “narrow political considerations.” The central Indian government essentially “had a right to buy a share in the political power in a state by promising aid.” In 1989, the first Kashmiri Pandit, from the minority Hindu population in the Kashmir Valley, was killed, followed by the murder of the retired judge who sentenced Maqbool Bhatt, the founder of the Jammu Kashmir Liberation Front, to death. In January 1990, security forces conducted a “house-to-house” search, rounding up over 300 people. The majority of those arrested were beaten or dragged out of their homes. The next day, people took to the streets in protest of the excessive use of force — 35 of them were shot. The district and sub-divisional courts were no longer functioning, and the social and welfare organizations such as the Red Cross were strained due to a lack of resources. Men, women, and children of all levels of society protested in the streets demanding azadi, or freedom. The government then enacted a curfew and “issued orders to shoot at sight.” Educational institutions did not remain open either — the only outlet left for the common people to express their anger was mosques.

Following the violence in Kashmir, 10,000 Kashmiri youth went to Pakistan for training and procurement of arms. Although Pakistan denied funding the insurgency, “evidence supplied by the American satellites and intelligence agencies, foreign correspondents and admissions by militants attest not only to the regular supply of arms and to the existing training camps, but their precise location and number within Pakistan’s jurisdiction as well.” In 1991, 300 Indian army men raided Kanan and Pashpora in Indian-administered Kashmir. 150 girls and women were raped, and 200 men were tortured. The militants targeted not only security forces, but also civilian officials, political leaders, and common citizens — “out of about 1900 persons killed by the militants, less than 400 were security personnel” and they also “abducted 742 people of whom 71 were killed.” While terrorism originates from a host of issues, including economic or political reasons, terrorists must acquire their resources from somewhere — in this case, Pakistan. However, it is no question that India also significantly contributed to the violence that occurred and has been occurring in Kashmir.

The Kashmiri nationalist movement contained various competing ideologies. While some upheld Islamic doctrine as the basis for a future independent state, others, such as Maqbool Bhatt, professed a secular nationalism that protected the interests of religious minorities. When Hindu-Muslim tensions flared in 1990, Pakistani officials decided that the secular constitutionalist Jammu Kashmir Liberation Front, which had “pioneered the militant movement,” was no longer of interest. Pakistan then restricted the flow of arms to the Jammu Kashmir Liberation Front. At this point, 20,000 Muslim families had been forced to migrate due to the violence, and an even larger number of Muslims had been murdered by security forces and militants.

Kashmir in the United States’ Public Sphere

Claiming neutrality not only disconnects the United States from this conflict, it also hides the fact that the insurgency actually has a life in the United States’ public sphere. In 1991, the United States House of Representatives commented on the insurgency, saying that the Indian government should take significant steps to improve human rights by giving “unrestricted access” to human rights organizations, carry out recommendations of the United Nations Human Rights Committee, and curb human rights abuses “committed by its security and police forces.” Two years later, the United States Senate expressed concern regarding the human rights violations in Kashmir and “cataloged the excesses committed by the security forces against civilians.” While the House of Representatives was condemning the human rights violations taking place, it failed to note how the United States was a contributing factor to the violence.

Where the silence of congressmen and senators on the United States’ involvement in Kashmir was noticeable, the actions of ordinary constituents forced the Kashmir dispute further into public life in the United States. In 1993, the Los Angeles Times published a letter from the Kashmir American Mission, based in Diamond Bar, California. The letter thanked the Los Angeles Times for bringing attention to the violence occurring in Kashmir, and claimed that the Kashmiri people were asking for an “end to Indian occupational terrorism in Kashmir.” Ali Khajawall, a Kashmiri-born American citizen and First Secretary of the Kashmir American Mission, went on to submit op-eds to multiple newspapers, including smaller publications such as The Daily Free Press at Boston University. The Kashmir American Mission also authored press releases which are now archived in Bill Clinton’s presidential library. The Kashmir American
Mission was not the only organization, however — Clinton’s presidential library also included press releases from the Kashmiri American Council and the Kashmir American Foundation. In 1993, the Kashmiri American Foundation, based in Washington D.C., sent a letter to Bruce Riedel, the director of Near East and South Asian Affairs in the National Security Council. The letter cited human rights abuses reported by Amnesty International, Asia Watch, and Freedom House, and said a delegation of three Kashmiri women would be traveling to the United States in hopes of enlightening people in the United States “on the severe conditions under which the Kashmiri people are forced to live.” In 1994, the Kashmiri American Council claimed, in a press release, that Clinton had “pledged to help bring peace to Kashmir” in a letter to the Kashmiri American Council.

The intentions of these organizations came into question in 2011, when Syed Ghulam Nabi Fai, the executive director of the Kashmiri American Council, pleaded guilty to conspiracy and tax violations “in connection with funneling at least $3.5 million from Pakistan’s government and major spy agency to influence U.S. policy on Kashmir.” The United States Attorney for the Eastern District of Virginia said Fai was a “paid operative of the ISI,” as he “did the bidding of his handlers in Pakistan while he met with U.S. elected officials, funded high-profile conferences, and promoted the Kashmiri cause to decision-makers in Washington.” According to campaign finance records, Fai had given $28,165 to federal candidates in political parties since 1990. Fair admitted “taking directions from ISI handlers and giving ISI contacts annual strategy documents, which showed how he would lobby on behalf of Kashmir.” The Kashmiri American Foundation is the lobbying arm of the Kashmiri American Council, and tax records found that they are sister organizations. In his op-eds in 2002, Khajawall identified himself as one of the founders of the Kashmiri American Council. Even when the Inter-Services Intelligence had stopped funding the insurgency, the United States did not suddenly become a neutral figure. The history of such outreach efforts by the Inter-Services Intelligence shows the ways in which the Kashmir insurgency was mobilized toward obtaining a voice in the United States’ presidential administrations.

The insurgency also had a life in judicial proceedings in the United States. In 1997, Anjam Parvez Khan entered the United States on a nonimmigrant visitor visa and applied for asylum. Khan, a citizen of India, was born in Kashmir and worked with the Jammu Kashmir Liberation Front. Before 1994, the Jammu Kashmir Liberation Front had separate militant and political factions. In 1994, “the two factions split into different organizations when half of the JKLF renounced violence.” The political wing advocated “nonviolently for an independent Kashmir,” and the militant wing was responsible for operating the armed insurgency. Khan testified that he was only affiliated with the political wing, and “his work with the JKLF was entirely nonviolent in nature, and that he had no knowledge of the activities of the military wing.” Khan said he worked on planning political activities, distributing aid, and raising funds. In 2005, the immigration judge denied Khan’s request for asylum because he “engaged in terrorist activity,” but granted him relief under the Convention Against Torture. In 2009, the case went to the Ninth Circuit of the United States Court of Appeals after Khan petitioned for a review of the decision of the Board of Immigration Appeals, which affirmed the immigration judge’s denial of asylum and withholding of removal. The court denied the petition for review. The result of the Khan v. Holder decision reveals the irony surrounding the situation concerning the United States’ foreign policy in South Asia. The case is not just an example of how the insurgency entered American public life, but also shows the United States’ hypocrisy regarding terrorism. The United States’ funding supported terrorism in Kashmir, just as Khan’s actions were deemed as supporting terrorism in Kashmir, and yet Khan was considered unworthy of asylum.

Domains of government in the United States continue to reflect on Kashmir in significant ways. In October 2019, the United States House of Representatives Committee on Foreign Affairs held a hearing on human rights in South Asia. The hearing took place a few months after the revocation of Article 370, and primarily concerned the human rights abuses committed by the Indian government in Kashmir. Throughout the hearing, members of the United States House of Representatives cited restrictions on the freedom of assembly, the freedom of the press, phone services, and internet services in Kashmir. While much of the conversation centered around current events, certain moments in the deliberations reflected the United States’ history regarding Kashmir. Just as they did in 1991, members of the House of Representatives publicly stated their concern for human rights in Kashmir. Congressman Sherman, the chairman of the hearing, referred to Kashmir as “the most dangerous geopolitical flashpoint in the world.” He claimed that he has strongly condemned terrorist attacks in Kashmir for years and for many years, “those opposed to Indian control in the Kashmir Valley have used terrorism.” Sherman referenced the history of terrorism in Kashmir, showing how even in 2019, the shadow of the insurgency and the unacknowledged role of the United
States underlie conversations about Kashmir.

Aside from concerns of human rights violations, other comments were reminiscent of the past. Congressman Ted Yoho asserted that the Kashmir dispute should “stay between India and Pakistan,” and the United States should be “facilitating partners in any capacity that we’re asked to.” The Chair of the National Advisory Council for South Asian Affairs, Ravi Batra, spoke in favor of the right-wing government of Narendra Modi in India and noted that “this panel is to figure out what American foreign policy should be and I’m here as an American citizen looking through an American lens... I don’t want to import the violence and the unhappiness that exists on that subcontinent.” While Batra meant to say this as justification for not discussing the chaos that led to human rights abuses, he seemed to be the only one to acknowledge that he is, in fact, an American, looking at the situation through an American lens. The United States did not acknowledge its role in the insurgency because the violence was never imported to the United States. It remained across the world, and therefore Americans did not face the consequences of its government’s actions. American government officials were not imprisoned and American journalists were not killed as a result of the insurgency. The conflict is always seen as distant from the United States, and conversations surrounding the conflict are just that — conversations. The United States has definable relationships with Pakistan and India, while Kashmir continues to be more abstract.

In reality, Kashmir and the events of the insurgency are not distant, and there is no fence blocking the territory, or protecting it, from the United States. Pretending like there is one only further hides the consequences of the United States’ actions, thus perpetuating the myth of neutrality. The idea of neutrality simplifies a relationship that is actually much more complex. The guise of neutrality also hides the ways in which the insurgency entered public life in the United States, and allows the United States and its citizens to be ignorant of their investments in the costs and outcomes of the United States’ foreign policy.

**Conclusion**

For Kashmiri Americans living in the diaspora, the United States-Kashmir relationship is impossible to ignore, as they have watched loved ones face violence and therefore are directly invested in how the violence continued to sustain itself. Majority of Americans have the privilege to accept the myth of neutrality, as the violence in Kashmir has not directly impacted them. Amongst this majority are Indian Americans, many of whom immigrated to the United States in the 1960s and have often favorably navigated the oppressive consequences of institutional racism in the United States due to the widely accepted idea that they are “model minorities” performing white collar labor. With the abuses of the Indian government in Kashmir on full display, many Indian Americans’ support of investing in violence has been uncovered, thus tainting the comfortable story. These observations, after the revocation of Article 370, are what fueled my curiosity for the United States-Kashmir connection. Evidently, the relationship and its ties to the Kashmir insurgency has been a part of the American public sphere and Indian Americans, specifically, have avoided it through the perpetuation of an intentionally incomplete narrative. However, the revocation of Article 370 was a turning point — Indian Americans now have to confront what they support, which is, in turn, leading many to reflect on the narratives that define their identities.

The United States-Kashmir connection not only destroys these comforts of Indian American identity, but also contributes to destroying the comfort of the broader American identity centered on individualism, capitalism, and multiculturalism. When one looks hard enough, the realities of violence and tragedy do not provide a comfortable story. Writing history is inarguably uncomfortable, but discomfort is the point — progress is impossible without nation-states coming to terms with the consequences of their investments. The guise of neutrality hides the impact of these investments, even when the events unfolding across the world are present in the American public sphere. Change, in whatever form, begins with identifying the roots, echoes, and causes of violence.
References


President Clinton Pledges to Help Bring Peace to Kashmir, 6 January 1994. Box 515, Folder 2, Clinton Presidential Records: Near East
and South Asian Affairs, Clinton Presidential Library. https://clinton. presidentiallibraries.us/files/original/ce62c6219a7c4635b6d6c-8c9fdee0a6.pdf


About the Author
Simren Verma is a senior majoring in History of Public Policy and Law at UC Santa Barbara, and will be graduating in Spring 2020. As an Indian American, Simren has always been interested in South Asian history, and her own family history and identity is what inspired her research on the United States-Kashmir connection. While at UCSB, Simren also developed a passion for journalism; she served as the University News Editor and then the Managing Editor at the Daily Nexus, UCSB’s independent, student-run newspaper. After graduating, Simren plans to attend law school.
Involvement in Greek Life for Latinx Students Pursuing Higher Education: Does Involvement Equal Persistence?

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Abstract
Cultural mismatch theory predicts that a mismatch between the independent values of a higher education institution and the interdependent values of an underrepresented student may pose significant challenges for such students. This study examines the relationships between Greek membership, ethnic identity, perceptions of the university, persistence attitudes, and belonging. Latinx and multicultural-based fraternities and sororities are relatively small and may provide a sense of familismo for Latinx students, thus matching their culture and influencing factors of persistence. We expect that Latinx Greek members will show stronger positive relationships between ethnic identity, persistence, and belonging compared to non-Greek Latinx students.

It is critical to understand the reasons why Latinx students are not performing to the same level as their white peers (achievement gap) with respect to persistence rates in college (Stephens et al., 2012) and to investigate the factors that can foster success in students. Additionally, factors relating to persistence such as sense of belonging, ethnic identity, and perceptions of higher education institutions have been studied and show that these factors impact student persistence. Specifically, students who have positive perceptions of the university environment and feel a sense of belonging are more likely to persist (Hausmann, et al., 2009; Murphy & Zirkel, 2015), and Latinx students who identify strongly with their cultural background may tend to be more sensitive to stereotypes about their ethnic group regarding their capability to be academically successful (Castillo et al., 2006). In addition to investigating the achievement gaps that Latinx students experience while pursuing higher education, it is also important to take a positive approach and identify the opportunities and features that promote the elements of persistence in these students.

Cultural mismatch theory predicts that students from working-class families will typically experience more difficulties than students from middle-class families in college because of the cultural mismatch between their interdependent cultural values and the independent values of the four-year institution (Stephens et al., 2012). The two fundamental principles of this theory are 1) that U.S. higher education institutions hold independent values while also excluding interdependent values seen in minority groups, and 2) that these institutions inhibit the success of minority students by maintaining this cultural barrier. Applying this theory provides an entryway into investigating different programs that may be beneficial for a four-year institution to adopt or increase support to reduce this gap.

A study by Stephens and colleagues (2012) demonstrates that a critical part of student persistence at the university is related to cultural mismatch theory. In one of these studies, first-year first-generation students from a private university were asked to read either a university welcoming letter that featured independent motives or a university letter that featured interdependent motives, then asked to complete as many anagrams as they could in 10 minutes. Results showed that first-generation students who read the interdependent university letter demonstrated more persistence by solving significantly more anagrams than the first-generation students who read the independent university letter, whose values conflicted with those of the university (Stephens et al., 2012). Persistence is an integral student success factor to study when it
comes to students from interdependent backgrounds.

In looking at factors that impact a student’s persistence in college, Castillo et al. (2006) had Latino-identifying students from a predominantly white university complete a series of surveys regarding persistence attitudes/behaviors, ethnic identity, and their perceptions of the university environment. Results from this study suggest that for Latinx students, perceptions of the university environment mediate, or explain the underlying process of, the relationship between ethnic identity and persistence attitudes (Castillo et al., 2006). The current study aims to explore student persistence, ethnic identity, and student perceptions of the university.

A student’s sense of belonging has also been shown to be an integral element related to student persistence such that students who feel a sense of belonging at their college or university are more likely to demonstrate higher levels of persistence (Murphy & Zirkel, 2015). Hurtado and Carter (1997) found that Latino students who held negative perceptions of their university had a lower sense of belonging but had a higher sense of belonging if they were involved in racial-ethnic organizations. Typically, Latinx students come from interdependent families, or families where members value the relationships with others in the group and consider them before making important, personal decisions such as deciding between going away for college or staying home to help out the family (Hernandez et al., 2010). Therefore, it would be useful to look into Latinx student involvement in Latinx- and multicultural-based Greek fraternities and sororities, commonly referred to as brotherhoods and sisterhoods, as a way of increasing student persistence since these organizations are close-knit and are generally comprised of students from the same or from similar cultural backgrounds.

Latinx culture tends to revolve around familialism, or interdependence, where emphasis is placed on the importance of family and depending on them as a support system to navigate different aspects of life by spending time with, providing support for, and seeking advice from family members (Schwartz et al., 2010). For individuals pursuing a higher education, their culture may influence how they establish themselves in the social relationships that they maintain at their institution (Rodriguez et al., 2003). For example, when looking at how collectivism, or interdependence, impacted students at a public university, Arevalo et al. (2016) found that Latino American college students were more likely than students from other ethnic backgrounds to endorse situations that involved helping others. This effect was true even if they weren’t related to the individuals involved, suggesting that Latinx college students see their college experience through the lens of helping others (Arevalo et al., 2016). When it comes to Latinx student persistence at the university, the methods in which they develop such social relationships and the nature of these relationships, such as through clubs, Greek affiliation, or housing arrangements, may be crucial in understanding how they influence Latinx student persistence and the university level.

The United Sorority and Fraternity Council (USFC) at UCSB governs the Latino/a/x-based and multicultural-based fraternities and sororities. Based on the UCSB USFC Community Report from the spring quarter of 2019, these fraternities and sororities may range between 10 and 30 members (USFC Community Report). Given that these fraternities and sororities are relatively small in size, it would be wise to see whether USFC fraternities and sororities provide a helpful support system for Latinx students. Additionally, much of the literature on fraternities and sororities focuses on the negative aspects of involvement in such organizations such as drinking habits, academic dishonesty, and drug use. By highlighting the positive outcomes of involvement in Greek life for Latinx students, researchers can work toward examining what features lead to these positive outcomes, thereby leading universities to consider providing more support for Greek life. Further, if the data suggest that involvement in Greek life has positive impacts on Latinx students’ persistence, then universities have a way that they can support marginalized students.

Latinx culture and values in the United States are primarily built upon collectivism, also known as interdependence (Rinderle & Montoya, 2008), meaning that members of these communities value the relationships they have with others in their group (Arevalo et al., 2016). Unfortunately, cultural mismatch theory predicts that members of these communities may encounter acculturation struggles, such as performing at the college level academically or understanding the norms of navigating the college atmosphere, compared to their white peers when they attend a higher education institution, which holds primarily independent values (Stephens et al., 2012). Further, previous research shows that Latinx students do not persist at the same levels as their white counterparts (Stephens et al., 2012). However, research suggests that perceptions of the university environment serve as a mediator, or as an explanation for the underlying process of the relationship between an individual’s ethnic identity and their persistence attitudes (Castillo et al., 2006). This previous research has led us to hypothesize that Latinx student involvement in a cultural-based Greek fraternity or sorority will develop feelings of familism at school which will help them develop a sense of belonging, maintain their ethnic identity,
and engender positive perceptions of the university, thus leading to more persistence attitudes and behaviors, compared to Latinx students not involved in a sorority or fraternity.

Methods
Participants
The sample included a total of 88 participants who self-identified as Hispanic or Latinx. Participants were recruited from the University of California, Santa Barbara by convenience sampling. Participants in a Latino/a/x-based or multicultural-based fraternity or sorority were recruited via email and personal solicitation. Participants in the comparison group were recruited via subject pool in the Psychological and Brain Sciences department. Data from the participants indicated that 52.3% of the participants are not in a Greek fraternity or sorority and 47.7% of the participants are in a Greek fraternity or sorority. Participants in the fraternities and sororities were compensated with a $10 Amazon gift card and participants in the comparison group were compensated with research credit.

Materials/Measures
Persistence Voluntary Dropout Decisions Scale
The Persistence Voluntary Dropout Decisions Scale is a 29-item scale designed to assess an individual’s persistence/dropout behavior using aspects of Tinto’s model, which asserts that to persist, students need to integrate into formal and informal academic and social systems. Participants rate the extent to which they agree or disagree with each statement on a scale from 1 to 7, where 1 indicates “strongly disagree” and 5 indicates “strongly agree.” Scores are calculated by summation; higher scores indicate that participants have higher persistence while lower scores indicate that they have lower persistence. Cronbach’s alpha was determined to be .84, .83, .82, .74, and .71 for the scales of peer-group interactions, culture and that of the university while lower scores indicate that more of a difference between the participants’ culture and that of the university. Cronbach’s alpha was determined to be .89 (Gloria & Kurpius, 1996).

University Environment Scale
The University Environment Scale (UES) is a 14-item scale designed to assess participants’ perceptions of the environment of the university they attend. Participants rate the extent to which they agree or disagree with each statement on a scale from 1 to 7, where 1 indicates “not at all” and 7 indicates “a great deal.” Five of the items are reverse-scored. Scores are calculated by summation; higher scores indicate that the participant has a predominantly positive view of the university environment while lower scores indicate a predominantly negative view of the university environment. Cronbach’s alpha was determined to be .84, establishing good reliability of the measure (Gloria & Kurpius, 1996).

Interdependent and Independent Items
The Interdependent and Independent Items survey is a 12-item scale designed to assess the participants’ motives for attending university; half of the statements refer to independent motives and the other half refer to interdependent motives. For each statement, participants indicate whether each statement was a top reason for wanting to attend college with a “yes” or “no.” Scores are calculated by summing the number of interdependent and independent motives separately. Chi-square tests determined this measure to be significant when comparing first-generation and continuing-generation students on the number of interdependent items (p < .001) and independent items (p < .05) they had selected (Stephens et al., 2012).

Multigroup Ethnic Identity Measure
The Multigroup Ethnic Identity Measure (MEIM) is a 12-item scale designed to assess participants’ strength of their ethnic identity. Additionally, participants are asked to indicate the ethnic group with which they identify and that of their parents. Participants rate the extent to which they agree or disagree with each statement on a scale from 1 to 4, where 1 indicates “strongly disagree” and 4 indicates “strongly agree.” Scores are calculated by summa-
tion and can range from 12 to 48. Higher scores indicate that the participant has a strong ethnic identity while lower scores indicate a weaker ethnic identity. Cronbach’s alpha was determined to be .85 (Roberts et al., 1999).

Sense of Belonging Questions
The sense of belonging questions includes four questions regarding the campus community (three Likert-scale, one open-ended) and 13 questions regarding how much the participant feels they
belong on campus on a Likert-scale from 1 to 7, where 1 indicates “not at all” and 7 indicates “a great deal.” These questions are a part of Stephens’ pilot study (Stephens et al., 2012).

**Procedure**
Participants gave electronic consent through the Qualtrics platform. Participants then completed a series of six surveys followed by a series of demographic questions. Participants were then debriefed and thanked for participating in the survey. Participants who were members of a Latinx-based or multicultural-based fraternity or sorority were compensated with a $10 Amazon gift card and participants in the subject pool were granted research credit.

**Results**
Using an independent sample t-test, the researcher examined if persistence, perceived university environment, cultural incongruence, motives for attending college, and ethnic identity differed between Hispanic/Latinx students involved in Greek life versus those not involved in Greek life. There was no significant difference between the groups in persistence scores \[ t (86) = .230, \text{n.s., Figure 1}. \]
However, there was a significant difference between the groups in perceived university environment \[ t (86) = -3.126, p = .002, \text{Figure 2}, \]
ethnic identity \[ t (86) = 3.73, p = 0.000, \text{Figure 3}, \]
interdependent motives for attending college \[ t (86) = 2.001, p = .049, \text{Figure 4}, \]
and cultural incongruence \[ t (86) = 2.093, p = .039, \text{Figure 5}, \] such that those involved in Greek life scored lower for perceptions of the university environment and scored higher for ethnic identity, interdependent motives, and cultural incongruence compared to those not involved in Greek life.
This study also examined ethnic identity as a mediator for perceptions of the university environment on persistence. A mediation analysis was performed using SPSS. The outcome variable for analysis was persistence. The predictor variable for the analysis was perception of the university environment. The mediator variable for the analysis was ethnic identity. There was a partial mediation of the relationship between university environment and persistence by ethnic identity (Figure 6).

Discussion

Results suggest a partial mediation of strong ethnic identity on the relationship between perceived university environment and persistence. This differed from a previous study, which identified a mediation of perceived university environment on the relationship between ethnic identity and persistence (Castillo et al., 2006). We chose to run the mediation model with the assumption that a student’s perceptions of the university would be influenced by their ethnic identity. Because ethnic identity relates to culture, and since cultural mismatch theory states that students who experience a cultural mismatch with the university are less likely to persist, it makes sense that a student’s ties to their ethnic identity would explain the influence of perceptions of the university on persistence. However, future research should look into these factors as possible mediators, as we got a partial mediation effect that was different than the one found in the study by Castillo and colleagues (2016).

Results also showed that Hispanic/Latinx students who were involved in a Latinx-based or multicultural-based fraternity or sorority had a stronger ethnic identity, higher reports of interdependent motives for attending college, experienced more cultural incongruence with the university, and held predominantly negative perceptions of the university compared to those not involved in such fraternities or sororities. These results coincide with cultural mismatch theory such that participants reported interdependent motives for college and experienced a cultural incongruence with the university, though much more so with the students involved in Greek life. It is notable that we did not find a significant difference in persistence in our sample, which does not support our original hypothesis.

Although there were significant differences between Latinx Greek vs. non-Greek students, we cannot make causal or directional claims from the data. It is possible that students who felt more cultural incongruence with the university are more likely to join a racial/ethnic Greek community, or it could be that the involvement in a racial/ethnic Greek community is leading to differences in cultural incongruence. The researchers think it is more likely the former, but it remains an empirical question whether this is the case.

Culture remains to be a significant element of Hispanic and Latinx students’ college experiences. While such students may look to Greek life for a feeling of home, being a member seems to strengthen their cultural identity, and our data suggest this may further widen the cultural mismatch with the institution. The fact that there were no differences in attitudes towards persistence seen in our sample suggests that even though Latinx students with Greek involvement showed differences in ethnic identity and perceptions of the university, these differences were not associated with persistence. It is curious that in our sample these factors did not affect students’ attitudes towards persistence. This could be a form of resiliency, developed out of necessity, for the Latinx students as they navigate a system where they feel a mismatch, but this mismatch does not change their attitude towards finishing college. Future research could explore this idea. The current research further emphasizes the need for the university to work toward developing a cultural climate that is representative of all of its students to ensure that all students have equal opportunities to be successful. This could include establishing more connections between faculty and academic resources and the cultural-based fraternities and sororities that allow students in these organization to develop a sense of belonging to the university and develop persistence from these additional relationships on campus.
References


About the Author

Alyssa Villa is graduating transfer student with a Psychological and Brain Sciences major and Educational Studies minor. She developed an interest in research after taking Dr. Woods’s PSY 98 class which subsequently led her to take her lab in advanced research methods, gain experience in research with her regarding transfer student college experiences, and received substantial help from her on the current study. She plans to take a gap year or two before going to graduate school where she hopes to gain a PhD in social psychology so that she can conduct her own research regarding underrepresented ethnic groups in academia.
Real and Imagined: The Lives of Anne Bonny and Mary Read
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Abstract
This paper focuses on the lives of two of the most well-known female pirates, Anne Bonny and Mary Read. Within this paper I analyze different documents that relate plausible histories of these two women’s lives and differentiate between the accuracy of sources. I question modes of discussing these women and utilize a variety of secondary sources to examine primary sources and their impacts. This paper critiques standard discussions and histories of these two women, instead offering a more humanizing and historically accurate way of seeing them that exists outside of popular culture’s romanticism and mythologization of them.

Introduction
According to David Cordingly, a scholar of pirates and a former staff member of the National Maritime Museum in Greenwich, England, a pirate is “someone who robs and plunders on the sea.” Pirates have long been a subject of fascination. Romantic tales of swashbuckling men are embedded in our mythologized historical cannon, and perhaps no pirates have been more romanticized than two female pirates: Anne Bonny and Mary Read. These two women have been the subject of myth and legend for hundreds of years, and each retelling of their tale has added another layer to what has become one of the most mythologized narratives of pirate history. Who were these women beneath the trappings of popular culture?

The Tryals of Captain John Rackam
When presented with the countless mediums that have displayed the lives of these women to the general public for generations, one might think that a plethora of documents survive to tell the tale of the lives of Anne Bonny and Mary Read. Surprisingly, strikingly little survives. The most definitive source is a document entitled “The Tryals of Captain John Rackam and Other Pirates.” This trial transcript, printed in 1721, is likely the most accurate surviving primary source available. However, it leaves historians with many gaps. Due to this being a governmental document, it contains a bias towards the British government and their colonial Vice Admiralty courts, which had committed themselves to hunting down pirates and ridding the ocean of their threat. Julie Wheelwright, a scholar of historical women’s roles in armed conflicts, notes that Admiralty Courts were designed to efficiently gather pirates’ booty: “As with Read and Bonny, such a high volume of business often meant that crucial elements of a case went missing.” These are the holes that both creative writers and historians have been trying to fill for centuries.

The transcript documents the hearings of all of John Rackam’s crew, a pirate better known as “Calico Jack” who was, according to Cordingly, “a small time pirate.” Pages 15-19 record the trials of the two female pirates onboard Rackam’s ship: Anne Bonny and Mary Read. The two pirate women were tried on November 28th, 1720. The court accused Bonny and Read for a number of piratical crimes, including plundering and taking various vessels, and both pleaded ‘Not Guilty’ to the charges. The prosecution presented a number of witnesses. Dorothy Thomas, the first witness, who was in a canoa taken by Rackam’s pirates, testified that “the
Two Women, Prisoners at the Bar, were on Board the said Sloop, wore Mens Jackets, and long Trouzers, and Handkerchiefs tied about their Heads; and that each of them had a Machete and a Pistol in their Hands. They “cursed and swore at the Men, to murder [Thomas].” She also reports “That the reason for her knowing and believing them to be women then was, by the largeness of their Breasts.” 10 Two Frenchmen, John Befneck and Peter Cemelian, described Anne Bonny and Mary Read as “very active on Board, and willing to do any Thing.” They handed gunpowder to the other men, and gave chase and attacked when seeing any other vessel. “[I]t was said of their Cloaths: and, at other times, They wore Women’s Cloaths.” Importantly, these men noted “that they did not seem to be kept, or detain’d by Force, but of their own Free-Will and Consent.” 11 The next witness, Thomas Dillon, whose sloop 12 was assaulted by gunfire from the pirate crew, described both women as “cursing and swearing much, and very ready and willing to do any Thing on Board.” 13 Neither pirate made any defense or objection to the sentence of death. 14 Yet, after the verdict had been declared, “You [...] shall be severally hanged by the necks ‘till you are severally dead.” 15 Both women declared that they were pregnant, and their judgement was postponed until an inspection had been made. 16

Charles Johnson’s A General History of Pyrates

Charles Johnson, a man about whom historians know almost nothing, is the author of one of the key texts of European pirate history and literature. 17 His book, A General History of the Pyrates, catalogs the lives, adventures, and deaths of numerous pirates. The book was published in 1724, only a few years after Bonny and Read’s trial. 18 We know very little about his research methods for this publication, except that he “must have attended several pirate trials in London and that he interviewed pirates and seamen who had voyaged with them.” 19 The book is divided into sections covering various pirate escapades, and he dedicates a portion of his book to telling the stories of Anne Bonny and Mary Read, the only two female pirates mentioned. Many historians and popular authors take Johnson’s history as fact, often repeating and refining his transcription of their lives without question. Marcus Rediker, an expert on Atlantic History, 20 writes, “Much of what is known about the lives of these extraordinary women appeared originally in A General History of the Pyrates.” 21 Even if historians don’t agree with everything Johnson writes, all historians discussing these two women’s lives or the lives of many other pirates in the early 18th century, refer and respond to A General History. Johnson gives a detailed account about the personal lives of these two women. He records that Mary Read was born in England as the illegitimate child of a woman whose sailor husband had never returned to her. 22 Mary Read was brought up as a boy due to her mother’s strategy to receive funds from her mother-in-law. Disguised as a male, she subsequently served in various military roles until she married a comrade. 23 Sadly, Read’s husband died and she was again forced to join the army to make money. 24 She boarded a vessel later captured by pirates. 25 The pirates kept her onboard disguised as a man, and she apparently performed well. She is reported as “call[ing] to those under Deck, to come up fight like Men, and finding they did not stir, fired her Arms down the Hold amongst them, killing one, and wounding others.” 26 And “fought [another pirate] at Sword and Pistol, and killed him upon the Spot.” 27 She fell in love with an impressed pirate onboard the ship and revealed her disguised gender to him, as well as to Anne Bonny and subsequently Rackam, the captain of the ship. 28 Johnson describes her as “as noble and reluctant about piracy, writing that many spectators at her trial "had Compassion for her.” 29 Although her judgement was avoided by her pregnancy (which was by her lover), she died of a fever in prison. 30 Anne Bonny’s story follows somewhat similar themes of love and ferocity, although Bonny is not given the nobility and chastity of Read. After a convoluted plot about stolen spoons and sexual interludes, readers learn that she was born the illegitimate daughter of an attorney and his maid. 31 Her father disguised her as a male clerk. 32 To the disappointment of her mother she married a sailor and moved with him to Providence. It was here that she met Rackam, with whom she decided to elope and go to sea disguised as a man, later having a child by him. She proved to be “no Body was more forward or courageous than she.” 33 Johnson concludes that the only thing we know about her after her trial and a subsequent stint in prison is “that she was not executed.” 34 Johnson’s stories of these two women are the majority of what lives on in pirate history and mythology as the legacies of Anne Bonny and Mary Read. Despite its relatively open-armed acceptance, the question of a General History’s credibility must be asked. In this essay, I will only consider Johnson’s credibility concerning his reporting on the lives of Anne Bonny and Mary Read, and will not comment on his credibility elsewhere in his book. We know of only two sources Johnson uses for this story: the trial papers, and alleged contemporary accounts. The editor of my copy of Johnson’s History, Manuel Schönborn, who does not question Johnson’s accuracy and credits this work to Daniel Defoe, the author of Robinson Crusoe, comments in
his notes, "Defoe’s source is the published Tryals of Captain John Rackam [...] I have been unable to find published material on the Rackam-Read-Bonny liaisons, though contemporary accounts seem to have been readily available to Defoe." 34 35 Researchers must assume that the only certain sources Johnson used were the Tryal document and conversations and investigations with contemporary sources who were connected to Bonny and Read. We do not know if he was personally present at the Rackam trial or not. The text indicates that Johnson did in fact conduct enquiries while formulating this history. Concerning a story about Bonny, he writes, "but upon further Enquiry, I found this story to be groundless."36 However, it is unagreed upon whether some parts or none of Johnson’s narrative are in fact fictional. Because of the nature of the number of sources, many historians and artists rely on primarily these two documents to inform them of the factual lives of Anne Bonny and Mary Read. Cordingly writes, "The printed record of their trial and brief references in the colonial documents and contemporary newspapers provide information about the last year or two of their lives, but for the rest we have to rely on Captain Johnson, who is usually accurate but rarely indicates the source of his information."37 Johnson’s track record of legitimacy, which has been researched by other historians, inclines many to believe that he is also accurate within this particular segment of his work. Is that entirely the case, or did Johnson allow himself some artistic license? In order to assess the accuracy of Johnson’s narrative, I will hold it against the few other primary sources we have and search for compatibilities and incongruences. A significant consonance is Rackam’s record of location, and how it lines up with other contemporary documents.38 On September 5, 1720, Governor Woodes Rogers of New Providence published a declaration, stating that Rackam and his crew were in the area, which corresponds with Johnson’s record of their travels.39 On October 17, 1720, the Boston Gazette reported “Several pirates are on the coast of the Bahamas, among which one Rackum who Run away with a Sloop of 6 Guns, and took with him 12 Men and Two Women.”40 This also lines up with Rackam’s description of the locations of these pirates.41 Clearly, Johnson did his research when it came to the geographical and temporal details of the story.

Despite this, there is a striking contradiction between the testimonies in the Tryal document and Johnson’s report. Much of Johnson’s story hinges on the fact that these were women disguised as men. Both Bonny and Read are portrayed as guarding the secret of their sex from other crew members.42 However, during the trial, no witnesses testify to these women having been in a disguise. Although Thomas, Befneck, and Cornelian all describe the women as having been sometimes attired in men’s clothing, none of them seem to have thought they were actually men. Thomas mentions knowing immediately that they were women due to “largeness of their Breasts,”43 and the Frenchmen describe them as sometimes wearing women’s clothing.44 It appears from these testimonies that these women were not disguised at all, but in fact freely presented their gender, sometimes wearing women’s or men’s clothes, and not using either to display a gendered disguise. Wheelwright points out, “This testimony suggests that the women were not disguised on the ship but simply wore male clothes for convenience during raids.”45 From Woodes Rogers’ declaration and also the notice in the Boston Gazette, it seems that the general public seems to have known that they were women as well. The latter describes the crew as containing “Two Women,” and the former lists them by name: “Whereas John Rackum, George Featherstone, John Davis, Andrew Gibson, John Howell, Noah Patrick——.&c. and two women Ann Fulford alias Bonny & Mary Read.”46 It seems that Johnson either assumed or fabricated the concept of these women as masquerading. It also appears that Johnson may have added some embellishments to the trial scene. Wheelwright notes that, within Johnson’s History, Read is accused of killing a man below decks during her trial, which she apparently denies.47 No record of this appears in the Tryal transcript, with Read and Bonny providing no statements until their declaration of pregnancy.48 Johnson also reports Read “commended the Justice of the Court before which she was try’d, for distinguishing the Nature of their Crimes; her Husband, as she call’d him, with several others, being acquitted; and being asked, who he was? she would not tell, but, said he was an honest man [...]”49 Again, there is no record of this in the Tryal transcript. Whether Johnson was told misinformation by people he interviewed that were present at the trial, or if he created these stories, it is uncertain. Either way, his work on the subject must be evaluated as perhaps not wholly trustworthy.

The General History and Subsequent Romanti-
cization

Charles Johnson was likely not a woman, and this fact, coupled with the realities of the inaccuracy of parts of his story, means that his account cannot be trusted to portray an accurate female lens. In reference to Johnson’s History, Wheelwright points out, “There is at best one reference to women every 15 pages; the often-de-
 rogatory fragments about women involved with Anglo-American
seafaring appear merely as background, as part of the taken-for-granted scenery.”50 She also claims that “The author takes full command of poetic license to flesh out the details of the pirate heroines’ histories and characters.”51 There are a number of instances during Johnson’s story that indicate a male-emphasis and narrative license, which rob these women of their humanity. When Johnson explains Read’s reveal of her gender to her lover aboard the ship, he describes it as “carelessly shewing her Breasts, which were very white.”52 The sensuality of this scene as well as Johnson’s emphasis of the whiteness of her breasts reeks of fetishization and pornographic intent. How Johnson could have possibly known the exact circumstances of this private moment, let alone the hue of her breasts, is a mystery at best. Moreover, it is unlikely that this moment ever happened, due to the aforementioned disguise being most likely a myth. Throughout the narrative there is also an intense focus on the sexual and romantic realms, both of these two women and of other women involved in the stories. There is more documentation about women’s private sexual lives than actual acts of piracy in Johnson’s narrative. An in-depth exploration of Bonny, Read, and their respective mothers’ romantic lives is included, but merely four actual acts having to do with piracy are told, only two of which go into any detail about the women’s role in these episodes. The fact that Johnson is so transfixed on their sexual lives (and because of this initial obsession, so are subsequent historians and writers) completely limits these women to a traditional female sphere of domesticity, sexuality, and motherhood despite them being figures that stepped outside of socially imposed roles, and strips them of their autonomy, making them into objects of male desire and available for exploitation by the reader. Wheelwright claims “the pirate legend also reminds readers that the heroine’s flight from domestic commitments was a temporary state: the ferocious Anne Bonny doubled as Captain Rackham’s mistress and the mother of his child; Mary Read offered to give up piracy for ‘some honest livelihood, to settle with her common-law husband’”53 Johnson’s sexualization and development of these women as caricatures instead of historical figures also allows them to be acceptable heroines for future generations, which are clearly not and never intended to be. Their numerous piratical and violent acts as detailed in the Tryal showcase them as anything but female role models and heroines of nobility.

Seeing These Women as Complex Humans: The Likely Realities of Their Lives as Pirates

Once these historical figures have been stripped of their mythic and popular associations, one can assess what the realities of their lives most likely were. Jo Stanley, the lead “research facilitator at the National Maritime Museum’s collaborative community project on women’s maritime history,”54 covers some specifics of what women’s lives may have been like aboard pirate vessels. She says, “The ships on which women set foot were complex workplaces with their own lifestyles.”55 Cooperation and proficiency were key, and Bonny and Read certainly existed as a part of this structure.56 Wheelwright writes that “‘they were not marginalized but played a central role in Rackham’s raids, as integral members of a tightly knit group.’57 Testimonies from the trial of the women being “very active on Board, and willing to do any thing” gives the impression that they were involved in all aspects of the ship.58 Rediker points out that “[t]hey also affirmed one of the principal values and standards of conduct among both seamen and pirates, that is, an unwritten code of courage.”59 as is affirmed by the testimonies that they were readily willing to attack and give chase to other vessels.60 As women, though, they would’ve faced certain challenges that may not have been apparent to male crewmembers. Stanley mentions that “[w]omen would have to cope not only with menstruation but perhaps with pregnancy, post-natal, or post-abortion symptoms.”61 It also may have been much harder for these women to gain respect and recognition by their crew as equals. They may have acted extra-violent and tough, “cursing and swearing much”62 in order to prove themselves as worthy of a place in the crew. Wheelwright ventures to say, “Sociological studies today show that women and men on occasion act the part of a violent person in order to maintain the respect of their peer group.”63 However, she also discusses how cruelty is profitable as well, and it is possible that these women acted violently to receive the maximum amount of money for their work, like the rest of the pirates onboard.64 Wheelwright also mentions that violence could serve as a form of “mistrargeted social retaliation,” which could certainly be true of women who possibly felt frustrated and confined by society’s restrictions and abuse of their sex.65

According to the testimonies, Bonny and Read probably wore a combination of men’s and women’s clothes, likely choosing whichever best suited the occasion.66 This was much more freedom of dress than would have been afforded to them on land.
The jackets and trousers described on page 18 of the Tryal are illustrated in a drawing, dated 1724 by an unknown English artist. This drawing first appeared in the General History, and depicts them in loose men’s clothing, carrying weapons and wearing handkerchiefs around their heads, as stated in the transcript.

What were these women’s reasons for choosing a life of piracy? It appears from the trial testimonies that these women were certainly pirates by their own consent, and that they had chosen this life for themselves as the best option, despite its challenges and moral implications. Johnson seems to attribute their choice mainly to issues of love and financial struggle. In summarizing Johnson’s narrative, Rediker (assuming the truth of the cross-dressing myth) writes, “Read did it largely out of poverty and economic necessity, while Bonny, turning her back on her father’s fortune, followed her instincts for love and adventure.” These two statements neatly tie up why a woman might choose to do something transgressive or immoral, and subverts the choice into something heroic and noble. However, when viewing these women as complete humans, their choice to become pirates was likely more complex. These things may have played into their choices, but by confining them into the realm of the heroic and justified we fail to see them as they truly were: people who chose a life of crime and brutality for their own gain. Even if their need was fully justified, the ends do not always justify the means. Maybe these women were drawn to piracy and the sea for similar reasons as men: adventure, opportunity, wealth, freedom, or desperation, but also for reasons unique to them that had to do with the realities of social constraints women faced. It’s entirely possible that love, wanderlust, or economic necessity were factors, but it’s important not to over-simplify or romanticize historical data into a fairytale-esque, idealized story, and lose sight of these women’s true identities and complexities.

**Conclusion**

Despite the amount of personal drive and ability to overcome obstacles these women possessed, their histories are still plagued with underlying tones of sexism and romanticism. Historians have a tendency to perpetuate false and sexist narratives simply by regurgitating the primary sources we have and failing to see them as lodged in a mode of hyper-masculinity. They may feel that this is justified because Johnson’s History is usually fairly accurate, and the primary sources we have about these women and their lives are limited. In reality, this is robbing both these female historical figures and all other women of being viewed from a fair and equal historical lens. By perpetuating these myths an oxymoron is created; women are pushed into the masculine world in order to make them worth paying attention to while simultaneously confining them to the hyperfeminine in order to make them palatable for the male reader and to prevent them from gaining an equal status as men. We continually fail to see historical women like Anne Bonny and Mary Read as credible not because of their gender, but because of what they actually did. Society is also insistent on painting them into heroines and role models, stripping their identities to portraits that fit neatly inside the patriarchal female cannon of notable women. Rediker writes, “even though Bonny and Read did not transform the terms in which the broader societal discussion of gender took place, and even though they apparently did not see their own exploits as a call for rights and equality for all women, their very lives and subsequent popularity nonetheless represented a subversive commentary on the gender relations of their own times as well as “a powerful symbol of unconventional womanhood” for the future.”

In contrast to this, I argue that there is in fact no conventional womanhood, since all womanhood is essentially radical because the norm is seen as the masculine. In this sense, Anne Bonny and Mary Read are no longer pedestalized for their sex, but can be seen as figures who made decisions based on realities. Witness Dorothy Thomas more than likely did not view these women as feminist icons. She likely saw them for what they were: criminals who were out to harm her and steal her possessions. Instead of fetishizing female ferocity, historians need to focus on the realities of Anne Bonny and Mary Read’s lives, as well as the decisions they made that don’t fit neatly inside of the male-imposed historical female cannon. These women were not fighting to become a symbol, but for themselves, tooth and nail and all the way to the gallows. These were criminals, cruel and vicious robbers who were ultimately sentenced to (unfulfilled) hanging for their crimes. They lived complex lives and had complex reasons for their choices, and were not attempting to fit into any category or branch of feminism or romanticism that we as modern historians may wish to pin them into today. They were wholly human, wholly female, and wholly powerful.
About the Author

Vivian Walman-Randall is a second year UCSB student. She is majoring in Creative Writing and Literature within the College of Creative Studies, and minoring in Art History within the College of Letters and Science. Vivian has been working on an ongoing project revolving around female pirates and representations of them with her faculty mentor Alison Williams, a lecturer in the Writing Department. Her primary focuses are historical, literary, and art historical research, nature poetry, and fiction. Vivian intends to attend graduate school to obtain a PhD, possibly in literature.
For Better or Worse? Examining the California Math Wars and its Lasting Impacts

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Abstract
In the last thirty years, mathematics standards have undergone frequent changes due to two conflicting perspectives: reformists and traditionalists. The purpose of this study is to assess any lasting impacts of the 1997 California Math Standards. I interviewed three faculty in three categories about diversity, curriculum, and stakeholder perspective. Presented here are findings and common themes that emerged from the analysis of interviews. Results showed that a lasting impact of the Math Wars was the 2010 Common Core Standards, written in a way to favor the reform movement of the 1990s. A professional development perspective as an approach is utilized.

Keywords: California Math Wars, Common Core State Standards, curriculum, diversity, professional development

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Introduction

In the 1997 Mathematics Content Standards for California Public Schools, the Kindergarten standard under Measurement and Geometry 1.4 states “Identify the time (to the nearest hour) of everyday events (e.g., lunchtime is 12 o’clock; bedtime is 8 o’clock at night)” (California State Board, 1999, p. 11). This standard uses specific language that fails to take into account the cultural relevance that students carry into the classroom. For example, students with parents who have multiple jobs may not go to bed at 8 o’clock, and therefore, might not understand the cultural relevance around this time. There is a need for a specific, in-depth analysis of the California Math Wars of the 1990s in order to document its lasting impacts on mathematics education in light of the addition of the 2010 Common Core State Standards (CCSS). There is a concern about the lack of diversity. Because of this, there must be more time spent at the intersection of cultural relevance and math education due to the impact both hold in the classroom.

Significance

Previous research has shown that students who are disproportionately affected by how a curriculum is written results in the exclusion of certain communities of color. As Alan Schoenfeld (2004) explains, “knowledge of any type, but specifically mathematical knowledge, is a powerful vehicle for social access and mobility. Hence, the lack of access to mathematics is a barrier—a barrier that leaves people socially and economically disenfranchised” (Schoenfeld, 2004, p. 255). As we can see in the Math Wars launched in the 1990s, the two factions formed, the reformists and the anti-reformists, took different sides to approach their arguments. The reformists argued that math was not accessible for communities of color and low socioeconomic status because the curriculum and standards were written in a way that did not allow them to succeed. The traditionalists, or anti-reformists, however, claimed that the math standards were working well for students (and believed that the test scores proved that), which is why they believed that change was not necessary.

BACKGROUND

When the National Council of Teachers of Mathematics (NCTM) implemented a reform-based curriculum in 1989, it initiated a new discourse of mathematics standards, curriculum, and the methods in which they should be taught to students, and, most of all, the California Math Wars.

This discourse divided parents, teachers, policymakers, and administrators. Davis et al. (2015) argue that mathematics in the 1980s and 1990s concentrated on standards which “focused on problem solving, based in ‘real life’, and utilized emergent technologies and manipulatives; practical and applied, but still aimed at comprehension (over calculation)” (Davis et al., 2015, p. 55). People who believed this to be true were given the name reformists.

In 1997, after much debate, traditionalists, who believed that standards should be based on drill-and-practice methods, influenced the standards commission in California that their methods were more equitable and trustworthy than those of the reformists. However, many reformists believed that the standards needed to be changed to be inclusive of marginalized communities. According to Schoenfeld (2004), reformists believed the 1997 standards contributed to how students of color were disproportionately affected by the method that mathematics was being taught; therefore, only certain groups of students benefited. Others (anti-reformists or traditionalists), represented primarily by parents, professors, and policymakers, believed that the standards students learned were acceptable because these were how they learned mathematics in school; therefore, change in the curriculum was unnecessary (Schoenfeld 2004). Nevertheless, this argument ignores the fact that the 1997 standards excluded certain groups of students and failed to address diverse learners.

Because of the disagreements in standards, in 2010, two groups, the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO), were brought together to create standards that would bridge the gap between the traditionalists and reformists. Together, they wrote the Common Core State Standards Initiative. The aims of the Common Core State Standards claim to be more inclusive by changing the language in which the standards were written and “provide clarity and specificity rather than broad general statements... not only stressing conceptual understanding of key ideas, but also by continually returning to organizing principles” (NGA Center et al., 2010). Although the 2010 standards are preferable to those from 1997, they do not completely eradicate the lack of diversity and its learners. Again, it is fair to assess the Math Wars to investigate if there are lasting impacts that affect the 2010 Common Core Standards (CCSS) and whether the CCSS alleviate (or
add to) any consequences of the Math Wars.

METHODS

Participants

Initially, the research was supposed to include five participants; however, due to COVID-19, the final sample included three case studies. Due to the consent forms originally signed to protect their identities, pseudonyms were given to each participant. The participants were site supervisor coordinators and/or professors. Site supervisors have experience within academia and the educational field to support and guide pre-service and in-service teachers in lesson planning, classroom management, etc. As they are a part of both academia and field experience, they can participate in two different discourses.

Participants were chosen based on the criteria that they have at least one decade of experience in the field. Two of these participants (Diana and Lisa) were credentialed teachers and taught in public schools for over ten years, both in California and New York. The other participant (Dave) coordinates national professional development programs. The participants were mostly of European descent. All participants were adults over the age of eighteen.

I interviewed site supervisors to examine the details of discourse affecting a Pacific coastal city. All interviews completed were done either in-person or through email conversation. Participants were interviewed in an office setting while being audio recorded for research purposes. Participants were interviewed once, lasting from twenty-five to sixty minutes. One interview was conducted through email. Additional emailing was done to receive follow-up information on the participant’s original answers.

Overview

Each participant was asked eight interview questions prompted by the interviewer. Using Spradley’s (1979) ethnographic interview process, I built a rapport with my interviewees by initially asking what they did for the Teacher Education program at UC Santa Barbara and how they became interested in teaching.

For the interview protocol, I used three categories of analysis: the perspective of stakeholders, curriculum, and diversity. In the “perspective of stakeholders” category, the aim was to seek information on how teachers, policymakers, parents, and educators perceive the California Math Wars and its impact on curriculum and diversity in California. Next, I used the “curriculum” category to understand the change in curriculum and how it has adapted to the new 2010 Common Core State Standards. Lastly, the “diversity” category was used to show the intersection between diversity and culture, particularly how it is portrayed in standards and curricula and how this intersection affects students of all backgrounds.

RESULTS

Category One: Perspective of Stakeholders

Three elements influenced the comparison of perspectives: professional development, parents, and media portrayal. My interviewee, Lisa, stated that “professional development is important in mathematics education because teachers initially lack the professional knowledge to teach mathematics.” Generally, in teacher education programs, student teachers are not given the resources to understand mathematics as a mathematician would. Professional development closes this gap and gives teachers the skills and tools necessary to teach reform-adjacent methods for mathematics, which will help mathematics become more equitable to additional students. According to my interviewee, Dave, “What you find is teachers are enthusiastic about the Common Core” when they are given access to professional development programs. More importantly, in order to successfully teach students mathematics, the teacher must understand where the students are developmentally in mathematics. Not all students are at the same level of mathematics when they reach a classroom, so in order to be successful, there must be an understanding of each individual students’ ability to do mathematics.

All three participants mentioned that parent perception is important in understanding the disconnect between them, their students, and teachers. According to the standard mentioned in the introduction (Measurement and Geometry 1.4), if students are told by their teachers that bedtime is 8 o’clock, but their bedtime, in reality, is later than that, the student may not know who to believe, and they have to choose between their teacher or their parent. In general, parents are worried and concerned about their children and want their children to succeed in school. When a parent feels powerless in helping their child with a homework problem, they become upset, especially in reform-based classrooms, because it was not how they experienced it when they were in school. However, to bridge this gap, teachers must involve parents in the learning processes with their children. For example, Diana discussed how doing Family Math Nights at her school was a helpful way in which...
parents can get involved in their child’s education while also making meaningful relationships with their child’s teacher.

Lastly, the media’s portrayal of the California Math Wars played a large part in how people perceived both traditionalist and reform-based methods in mathematics education and has exacerbated the Math Wars’ impact on the public (Becker and Jacob, 1998). By reporting that there was a controversy between the two camps, and not explaining why there was controversy, the media created an influx of misinformation to the public, making it more difficult for people to make informed decisions about what was happening. Diana claimed that there was a “public relations concern” because the education community did not do a proper job of communicating what was happening in the 1990s. Because there was no reliable source for people, it led to many supporting the traditionalist camp to stop reform-based methods in mathematics curricula. Media portrayal is so heavily influenced that it can, for example, persuade how principals feel about reform-based methods. Dave told of an experience they had with a principal:

I asked some third-grade teachers, with the principal’s, their principal’s in the audience. And I said, “the tests are coming up, what’s the hardest problem these third grade teachers, their kids gonna have on the test?” And they said something like, “This, they’ll never get this right. If they are asked 350-199, they will get that wrong for sure.” And I said, “But this is really 356-200, isn’t it? Because you move this by one, and I said, “will your kids have any trouble with that?” And they say, “Oh, everybody gets that right, that’s too easy.” So I said, “Well, would you talk about this, because actually this is a detractor problem you find on standardized tests….I shared this and one of the principals rose to his feet and he screamed “I will not allow that in my school.” And I said, “why?” He said, “Because you’re encouraging the children to cheat. That’s cheating.” And it was an incredibly tense situation, it was not resolved.

This interaction is proof that even though the mathematics done in the aforementioned quotation is correct, people believe that reform-based mathematics is trickery and cheat the system, even if there is research to prove that this is not the case.

Category Two: Curriculum

Two participants, Diana and Lisa, mentioned that mathematics, as a science, is supposed to be impartial; nonetheless, it is taught partially. However, a teacher feels about math is the way they will portray it to their students, no matter what curriculum is used. If teachers had a positive experience in math in grade school, whether it was a traditional or reform-based curriculum, they are more likely to give their students that feeling as well; however, if it is the opposite, students may have a difficult time learning mathematics. This is important in understanding why professional development programs for teachers should be mandatory.

According to the traditionalist camp, context applied to content dumbed down concepts down for students. However, according to my interviewees, the role of context in the curriculum is essential for all students, especially low-income minority students, to succeed in school. Eric Gutstein (2006) argues how using a pedagogy with social justice concepts helps students to understand not only mathematics but also real-life situations.

Understanding the curriculum and its role in the Math Wars is crucial. The reform-based curriculum relies on problem-solving techniques as a necessity. Lisa stated that “the way it is taught in traditional classrooms, rote memorization of procedures, does nothing to help students really understand.” Research has shown that test scores improve when a problem-solving-based curriculum is used versus a drill-and-practice-based curriculum (Jacob, 2001). The NCTM (1989) standards were preferred, not only because they were reform-based, but because they used problem-solving as the core of their philosophy. Certain states, like New York, preferred the NCTM (1989) standards over California’s back-to-basics (traditionally based) curriculum, which was being used around the same time.

Category Three: Diversity

According to Diana, money and resource allocation plays a large role in which students are given a better education. Students that go to schools with less funding and resources (attended by students mainly who are underrepresented and of low socioeconomic status) are at a disadvantage compared to students that go to a school with more funding and resources.

Referring back to the 1997 Kindergarten standard under Measurement and Geometry 1.4 (see introduction), there was a general consensus amongst my interviewees that this standard was developmentally inappropriate for students regarding age and grade. The reason this standard was included was based on the need to assess standards. To prove that the standard was “achievable,” policymakers needed to create a standard that would create a bell curve, meaning that they knew some students would not be able to reach this benchmark at this age, which says a lot about assumptions between students and culture. If standards only represent one group of students, many underrepresented students
are left behind to fail, leaving the question of “why aren’t all standards equitable for all students?”

**DISCUSSION**

The results of this research show that parent perception is important to students’ mathematical learning. For a productive learning climate, there must be outreach (i.e., Family Math Nights) where parents are introduced to what their children are learning in the classroom.

In addition, the reform movement of the 1990s resembles the 2010 Common Core State Standards; however, the CCSS has decades of research completed about its effectiveness, compared to the reform movement that had previously failed.

Research has shown that social justice is one pedagogy teachers can use to address inequities in curriculum and standards. According to Marilyn Cochran-Smith (2004), there are six principles of social justice that attempt to eradicate inequities embedded in standards and curriculum. Three of these principles are explicitly essential: Principle Two, Principle Four, and Principle Six. Principle Two (Build on What Students Bring to School with Them—Knowledge and Interests) argues how all students (no matter what their backgrounds or demographics are) have cultural knowledge and it is important that students can use that knowledge in classroom discussions (Cochran-Smith, 2004, p. 69). Principle Four (Work With [Not Against] Individuals, Families, and Communities) discusses why students’ families must be incorporated into classroom discussions. Student teachers must be mindful of how they portray ideas to their students because teachers can have underlying biases on certain topics and must learn how to teach students impartially (Cochran-Smith, 2004, p. 72-73). Principle Six (Make Inequity, Power, and Activism Explicit Parts of the Curriculum) explains the importance of why student teachers must include activism in their classrooms whenever possible.

Multiculturalism is important in the classroom, and teachers need to change curricula in order to find better ways to teach their students about (age-appropriate) inequity and power structures. To support this argument, Gutstein (2006) uses case studies of Latino/a parents to argue that without context, some students cannot relate to content, which leads them to feel left out of conversations in the classroom. Social justice as a pedagogy will help teachers alleviate some of the consequences of both traditional and reform-based curriculum and standards.

Jo Boaler (2016) and Pete Wright (2012) discuss how multi-dimensional mathematics, complex instruction, and relational equity can also be used together to create a mathematical framework for teachers who need guidance on navigating standards and curriculum given to them. Multi-dimensional mathematics involves “disciplinary practices, such as problem-solving, reasoning, and constructing arguments that are now enshrined in the Common Core Practice Standards” (Boaler, 2016, p. 172). Complex instruction shows “an approach where students are encouraged to explore different ways of representing and solving a problem and to work collaboratively” (Wright, 2012, p. 10). Relational equity “involves students demonstrating respect for the contributions of others and taking responsibility for the learning of the whole group by helping those with less understanding” (Wright, 2012, p. 10). If teachers can successfully employ these frameworks, they will reduce the amount of inequity that the standards and curriculum bring. Even if the standards are to change, it is still important that teachers practice these in the classroom so that their students have the best possible chance of learning.

Lastly, the theme that emerged throughout all of the interviews established that professional development is important for teachers to have access to when standards and/or curricula are changing. Without professional development, teachers have limited resources available to help them understand new concepts.

**CONCLUSIONS**

Regarding the 1997 standard Measurement and Geometry 1.4 (see introduction), compared with the 2010 CCSS, nowhere in the 2010 Common Core State Standards is there a mention of kindergarteners needing to understand time, with reference to when tasks should be completed during the day. Not only has that standard disappeared in the 2010 Common Core State Standards, but the CCSS has split the 1997 standard category of Measurement and Geometry into two categories: Measurement and Data, and Geometry.

The results of this research prove that the lasting impacts of the California Math Wars are the 2010 Common Core State Standards. Common Core has the potential to alleviate the consequences of the Math Wars through a social justice pedagogy if resources are given to both teachers and parents. The media portrayal of the CCSS has similar feedback from parents: negative. Because there is not enough parent outreach, parents do not have the tools...
necessary to help children, which resembles the reform movement of the Math Wars in the 1990s. There needs to be more professional development programs for teachers and more outreach for parents to reach common ground. Common Core is written in a way to favor the language of the reform movement of the Math Wars, proving that problem-solving techniques are preferred over drill-and-practice methods of mathematics.

**Future Directions**

Due to COVID-19, the availability of participants was limited. To enhance this research, there should be a larger sample size that accounts for a diverse demographic of participants. Participants should include teachers, especially in mathematics, who have been teaching for more than thirty years, to record personal experiences from the Math Wars in the 1990s. Given the current educational climate, professional development needs to be complex and account for diversity, socioeconomic status, mathematics, and content. A reevaluation of policy that uses the Math Wars as a guide is necessary for professional development programs. Also, because this research only involves California and New York, further research should include considering case studies that compare math reform across the United States to see if there is a basis for mathematics standards policy reform. Lastly, research should be done to effectively assess if, and how, the Common Core State Standards use cultural relevancy to bring equity to all students because curriculum should not be the only access students have to cultural relevancy.

**References**


About the Author
Marissa Woods, a graduating senior, is a History major with a minor in Education. During her time at UCSB, she participated as a mentor in the Black Scholars Hall Mentorship Program. Marissa was also an URCA Grant recipient and dedicated her senior year to two research projects within the Education Department. After graduating, she plans to attend UC Riverside to obtain a Master’s in Education and multiple-subject teaching credential to become an elementary school teacher.

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An Analysis of the Reliability of UN Peacekeeping in the Context of Modern Global Conflicts

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Abstract
The purpose of this research project is to assess the reliability of UN Peacekeeping as a strategic conflict resolution tool in the context of modern global conflicts. This paper evaluates the efficacy of UN Peacekeeping on the strategic, operational, and tactical levels of operation, and analyzes its performance through the lens of Clausewitz's concepts of fog and friction. This paper concludes that the systematic challenges peacekeeping operations consistently face at each level of operation, coupled with the increasing complexity of contemporary global conflicts, calls into question the ability of UN Peacekeeping to reliably navigate and resolve modern-day global conflicts.

INTRODUCTION
The international community relies on UN Peacekeeping to undertake complex global conflicts and resolve them peacefully and effectively; however, these expectations are both extremely challenging and rarely achieved. As global conflicts and peacekeeping operations become more complex, it is increasingly important to analyze the efficacy of the entities we task with resolving these issues. Thus, it is important to analyze UN Peacekeeping in the context of modern international conflicts and assess its reliability as a tool for contemporary global conflict resolution. This paper will analyze UN Peacekeeping performance at each of the three levels of war and discuss common issues through the lens of Clausewitz’s concepts of fog and friction. In order to analyze these subjects, it is important to first define the relevant terms and concepts.

UN Peacekeeping
At the institutional level, peacekeeping is a multilateral diplomatic tool aimed at global resolving conflicts and preventing violence. Peacekeeping as it exists today was not specifically included in the 1948 Charter of The United Nations; rather than being precisely created, organized and established as a structured component of the UN, peacekeeping evolved out of necessity in a rather erratic and disorganized way.

Since the conception of UN Peacekeeping, the nature of global conflicts has changed significantly. The increasing prevalence of intrastate wars, failing states, and multidimensional global conflicts has significantly augmented the complexity of peacekeeping operations. Thus, it is important to evaluate the capability of UN Peacekeeping to reliably adapt to and resolve modern global conflicts.

Three Levels of War
Military organizations and operations are often discussed in terms of the three levels of war: the strategic level, operational level, and tactical level. Because modern UN Peacekeeping operations are essentially military operations, they must perform many of the same functions – and face many of the same challenges – as traditional state militaries. In the context of modern global conflicts, it is useful to assess the overall efficacy of UN Peacekeeping by analyzing its
performance at each of the three levels of war.

**Clausewitz’s Concepts of Fog and Friction**

In his pivotal book, On War, Carl Von Clausewitz establishes his concepts of fog and friction, which are frequently cited in discussions of military operations and warfare. Because modern UN Peacekeeping operations are essentially military operations, these concepts are useful in discussions of the challenges facing peacekeeping operations in contemporary settings.

Fog can be explained as, “the tendency for unexpected events and operational challenges to erode a force’s effectiveness, disrupt plans, and hinder communication” (Asal, 2014, p.478). International actors often perceive UN Peacekeeping as an ideal concept: an effective, united force that prevents war, promotes peace and protects human rights. However, in reality UN Peacekeeping operations are complex, multidimensional tactical endeavors comprised of many individual components and tasks, wherein “each of these individual tasks can be delayed, misapplied, or even fail in unpredictable ways due to an interaction of incompetence, misunderstanding, and/or unforeseen circumstances” (Asal, 2014, p.479).

Fog, on the other hand, “is a specific type of friction that has to do with the incompleteness and inaccuracy of information” (Asal, 2014, p.478). The fog of war has to do with uncertainties about the enemy; their intentions, strategies, capabilities, etc. However, in the context of UN peace operations, fog entails not only ambiguity about the various parties in the host country, but also about UN Peacekeeping in and of itself – a concept which lacks clarity to this day. In fact, according to the former Under Secretary General for the Department of Peacekeeping, “There is still no definition on what it (peacekeeping) entails” (Tsagourias, 2006, p.468). Clausewitz’s fog and friction are important principles which help us conceptualize and attempt to understand the complexities of UN peace operations in modern global conflicts.

**STRATEGIC LEVEL**

The strategic level is the level of war at which nations determine their overarching strategic objectives, establish doctrine and policy, and create internal structures to achieve these objectives. The strategic level of UN Peacekeeping involves the formation and revision of peacekeeping principles and doctrine, the coordination of internal structural organization, and the strategic planning of UN Peacekeeping policy. UN Peacekeeping has struggled with issues of definition and clarity since its emergence in 1948. While peacekeeping still lacks a clear definition, it is most consistently explained by its three guiding principles which are: 1) consent of the parties; 2) impartiality; and 3) non-use of force except in self-defense and defense of the mandate (UN, n.d.). However, while these principles are intended to serve as UN Peacekeeping’s principal sources of clarity, they are instead the source of immeasurable confusion. By analyzing issues related directly to the structure of UN Peacekeeping as defined by its guiding principles, we can better understand the challenges facing peacekeeping operations at the strategic level.

**Peacekeeping Guiding Principles in the Context of Clausewitz’s Fog and Friction**

Fog and friction are important principles which help us conceptualize and understand the complexities of UN Peacekeeping operations. Discussing these concepts in the context of the guiding principles of UN Peacekeeping can help illuminate fundamental obstacles peacekeepers and policymakers face that result directly from the peacekeeping principles themselves.

The first pillar of the trinity of guiding principles is the consent of the parties to the conflict. For the UN to be able to intervene in a sovereign territory’s affairs it must have the consent of the state’s government and other main parties to the conflict. While this principle may have been straightforward at other times in history, the increasing prevalence of intrastate and multiparty conflicts has deeply challenged the concept of ‘consent of the parties’ due to larger numbers of small, warring factions within conflicts involving civil wars and/or failing states. The UN Peacekeeping website is quite transparent in acknowledging this issue:

“The fact that the main parties have given their consent to the deployment of a United Nations peacekeeping operation does not necessarily imply or guarantee that there will also be consent at the local level, particularly if the main parties are internally divided or have weak command and control systems.” (UN, n.d.).

Additionally, the subjectivity of the idea of, “main parties to the conflict” invites us to question:

“How does consent matter?; who gets to decide whose consent matters and whose doesn’t?; what happens when countries withdraw their consent?; and, how should the UN deal with parties who didn’t explicitly consent?” (Johnstone, 2011, p.175). These questions and more constitute the fog surrounding the principle of consent and account for the problems that result from it.

Legitimate, unqualified consent is unfortunately rare; “consent is often qualified in one of three ways: it is either unreliable, or brought about by external pressure, or open-ended” (Johnstone, 2011, p.170). In recent peacekeeping efforts in Burundi, Sudan, and the
Democratic Republic of the Congo. “Host governments have either called for premature withdrawal of missions or so obstructed the operations that fulfilling the mandate became, or is becoming, almost impossible” (Johnstone, 2011, p.168). The question of what to do in these situations is shrouded in fog, but the consequences of a lack of legitimate consent from all parties are clear. In the worst-case scenario, when consent is not clear, consistent or credible, it can result in attacks on UN peacekeepers. For example, the 2017 attack on MONUSCO personnel in the DRC, and the 1993 attack on UNOSOM II personnel in Somalia both resulted from a lack of legitimate consent by all involved parties (Burke, 2017) (New York Times, 1993). The fog surrounding the idea of consent has resulted in the implementation of peace operations in areas where consent was not clear, consistent or credible, and peacekeepers have died as a result. Thus, we can see that the fog and ambiguity surrounding the concept of consent, and the issues that result from this fog, severely jeopardize individual peace operations and the concept of UN Peacekeeping as a whole.

The second pillar of UN Peacekeeping is impartiality, which has been ambivalent since its creation in 1956, especially in the context of the use of force. The complexity of this issue has increased continuously. “In response to the increasing prominence of intrastate conflict, and to expectations that peacekeepers will stop human rights abuses and protect civilians” (Levine, 2011, p.1). A study done by Professor Daniel H. Levine in 2011 demonstrates the varied perceptions of impartiality across different peacekeeping missions and among various peacekeeping personnel. He argues that, “definitions are similar but not the same, and that lack of consensus exists in the field as well as in official statements and analyses” (Levine, 2011, p.426). His research reveals a dense fog surrounding the strategic understanding of impartiality, the implications of which greatly jeopardize peace operations and peacekeepers’ safety.

Additional issues concerning impartiality can occur even when mission mandates are quite clear. In some missions, such as MONUC in the DRC, part of the peacekeepers’ mandate was to support national forces (Levine, 2011). However, this created a conflict of interest when, “national forces themselves violated human rights (and impartiality, implicitly, demanded that all rights violations be treated equally)” (Levine, 2011, p.428). This conflict raises a series of important questions: when a mission’s mandate conflicts with UN guiding principles, to which guidelines are peacekeepers expected to adhere?; when confronted with spoiler groups and/or groups committing gross human rights violations, how are peacekeepers still supposed to remain impartial?; what if their impartiality towards conflicting parties impedes the peace process? Levine confirms this observation, warning, “Failure to make expectations about impartiality clear, especially as they relate to use of force, can cause direct operational problems for missions” (Levine, 2011, p.429). Fog surrounding the meaning of impartiality and its correct execution, and frictions resulting from conflicting perceptions of impartiality can both directly impact peacekeeping operations by creating disunity, frustration, and confusion among peacekeepers.

The third pillar of the UN Peacekeeping trinity is limited use of force. This is arguably one of the most important—and most contested—principles of UN Peacekeeping, and has evolved significantly over time. Dr. Daniel S. Blocq explains this shift: “Until recently, peacekeepers were formally not authorized to use force to prevent massive atrocities. At last the United Nations is changing the mandates for peacekeeping operations. The UN peacekeeper is now authorized to use force to protect civilians, but he or she is left with no specific guidelines” (Blocq, 2006, p.210).

Peacekeepers should expect to find specific operational guidelines regarding the use of force in the Rules of Engagement. However, the UN is not an autonomous actor; many factors converge to form the principles and bodies that constitute it. Since the UN doesn’t exist independently, neither do the Rules of Engagement; rather, “they are an amalgamation of political, legal, and military-operational requirements” which are established through “national policy and international law” (Blocq, 2006, p.205). Unfortunately, both of these entities are, “ambiguous in relation to peacekeeping”, and lack cohesive guidelines (Blocq, 2006, p.205).

With no consistently reliable guidelines regarding the use of force, peacekeepers constantly operate in a dense fog which severely jeopardizes their objectives and potential efficacy in achieving them. Furthermore, peacekeepers lacking clarity and confidence greatly magnify the potential occurrence of friction (tasks failing in unpredictable ways due to, “incompetence, misunderstanding, and/or unforeseen circumstances”) (Asal, 2014, p.479). Ambiguous instructions regarding the use of force lead to subjective interpretations and inconsistent implementation, which puts civilians and peacekeepers in danger. This ambiguity threatens the potential success of individual peace operations and the very concept of UN Peacekeeping as a whole.

In summary, while UN Peacekeeping’s fundamental principles are meant to be its principal source of clarity and structure, they are instead highly ambiguous and inconsistently implemented. The entire concept of UN Peacekeeping is shrouded in fog and plagued by frictions. As the basic doctrinal structure of UN Peacekeeping is uncertain in and of itself, this ambiguity contaminates all other strategic-level operations and results in inefficiencies which extend throughout UN Peacekeeping operations. The UN’s failure to create
and maintain a clear, consistent and credible doctrine, along with its inability to establish organized internal structures and coherent principles and policies demonstrates its lack of efficacy at the strategic level.

**OPERATIONAL LEVEL**

The operational level is the level of war at which strategic objectives are translated into campaign plans and major operations. The operational level of UN Peacekeeping involves large-scale coordination and preparation of peacekeeping operations; it is the stage where the principles of peacekeeping are manifested in the form of mandates and mission plans. Mission approval and establishment of the mandate are the responsibilities of the UN Security Council, while operational planning, financing, monitoring, and administrative functions are concerns of the General Assembly and Special Committee on Peacekeeping Operations (UN, n.d.).

Many of the issues that occur at the strategic level trickle down to the operational level. For example, the lack of clarity regarding the principle of impartiality – which is derived from larger structural problems that exist at the strategic level – can result in issues at the operational level regarding coordination and planning of specific operations and mission plans.

Because modern UN Peacekeeping operations are essentially military operations, they face many of the same operational-level challenges as traditional national military operations including campaign planning, troop organization and mobilization, establishment of mission protocols, and logistical planning. All of these operational-level functions require adequate military intelligence; without it, one cannot effectively plan any aspect of a military campaign.

Yet UN Peacekeeping has historically had a complex relationship with intelligence, the complications of which have created countless operational-level challenges for decades. While intelligence is only one specific aspect of mission planning, it is crucial to many – if not all – functions at the operational level, and thus serves as a representative case study to analyze when discussing the efficacy of UN Peacekeeping at the operational level.

**Analysis of the Evolution and Current Status of UN Peacekeeping Intelligence**

One of the most critical types of fog UN peacekeepers face is a lack of information. As peacekeeping missions become more complex – and more perilous – reliable information and acute situational awareness are necessary for success and survival. Unfortunately, the UN’s willingness to employ intelligence in peacekeeping missions has historically been slow and reluctant. While it has increasingly integrated intelligence into recent missions in an effort to improve decision-making, mitigate violence, and protect the lives of peacekeepers and civilians, UN Peacekeeping intelligence capabilities are still far from adequate.

It is impossible to thoroughly understand the status of peacekeeping intelligence today without understanding its history, just as it is impossible to appreciate its evolution without acknowledging its humble beginnings. In fact, humble is an understatement; “the intelligence component in peacekeeping was considered taboo during the Cold War because of its association with Great Powers espionage practices”, indeed so taboo that, “the use of the term ‘intelligence’ was banned” (Kuele & Capik, 2017, p.45) (Rietjens & Dorn, 2017, p.199). At that time, the idea of any sort of, “intrusive gathering of information” was rejected, as the UN was still establishing its legitimacy and, “felt it could not afford to lose credibility or tarnish its image as an impartial mediator” (Rietjens & Dorn, 2017, p.199). This rejection of intelligence in peacekeeping operations contributed to a significant lack of information on the operational and tactical levels, resulting in dangerous conditions and sometimes disastrous consequences.

The consensus on peacekeeping intelligence began to change at the turn of the century after the Brahimi Report (2000) called for the, “increased collection and analysis of information on the relevant actors in a given mission area” and after a tragic bombing attack on a UN compound in Baghdad (2003) revealed the urgency of improving intelligence capabilities (Nordli & Lindboe, 2017, p.5) (Duursma & Karlsrud, 2019). As peacekeeping missions became increasingly complex and dangerous, the UN began to gradually embrace the idea of utilizing intelligence to improve the safety and efficacy of its peacekeepers. In 2006, the Department of Peacekeeping Operations began allowing, “all-source information gathering using military, police and civilian personnel”, which is still largely in effect today (Dorn, 2009, p.806).

However, UNPK intelligence capabilities remained far behind the rest of the world and prevented the adequate performance of necessary operational-level functions. For instance, while reconnaissance drones (UAV’s), were “first deployed on a large scale in the Vietnam War”, use of surveillance drones in UN Peacekeeping operations wasn’t permitted until 2013 (IWM Staff, 2018) (Katombo, 2013). The greatest advancement of peacekeeping intelligence occurred during the UN mission in Mali (MINUSMA) with the creation of a new military intelligence unit called the All Sources Information Fusion Unit (ASIFU) in 2014 (Rietjens & Ruffa, 2019).

As peacekeeping intelligence continued to develop, so did the necessity for it to be more structured and effective. However, offi-
cational policy wasn’t established until the creation of the first UN Peacekeeping Intelligence Policy in May 2017 (Duursma & Karlsrud, 2019). Even after this policy was finally created, numerous issues remained. The Policy, characteristic of many official UN documents, is vague and “avoids the more controversial aspects related to the challenges of maintaining impartiality found in the traditional understanding of intelligence” due to the contentious perceptions of intelligence in the UN (Nordli & Lindboe, 2017, p.7). This inevitably creates and sustains fog surrounding the structure and intentions of peacekeeping intelligence.

Multiple UN reports have emerged in response to the policy’s enactment calling for further development and clarity, including the Cruz Report (2017) which asserted that current missions, “lack the basics, especially human intelligence, networks of informants, situational awareness, and capacity to communicate with the population” (Cruz, 2017, p.6). Even so, the UN has not published any adjustments or improvements to the policy thus far.

The evolution of intelligence in UN Peacekeeping continues to be vital to the success of peacekeeping operations and the safety of peacekeepers and civilians. And, while the, “implementation of intelligence within a UN mission has been widely criticized”, there is, “a near unanimous assessment from the existing literature that an intelligence function is required in UN peace operations” (Rietjens & Ruffa, 2019, p.20) (Nordli & Lindboe, 2017, p.5). Accurate information, situational awareness, and informed decision-making are all necessary conditions for a successful mission, and intelligence is the only way to achieve any of these goals. The current status of peacekeeping intelligence is one of continuous, albeit reluctant, development; it is slowly evolving but has a very long way to go to adequately support UN operational-level processes with sufficient intelligence.

In sum, the lack of adequate intelligence significantly impairs sufficient operational-level planning, and the UN’s reluctance and/or incapacity to resolve this issue, despite its serious impacts, indicates significant inefficiency. Furthermore, while intelligence is only one dimension of UNPK operational-level functions, the implementation issues and lack of timely improvement its history demonstrates can be seen in many other components of UN Peacekeeping efforts; thus, it serves as an accurate representation of the UN’s lack of efficacy at the operational level.

TACTICAL LEVEL

Finally, the tactical level is the level of war at which operational objectives are physically implemented through the planning and execution of battles and military engagements. In the context of UN Peacekeeping, the tactical level consists of the planning and execution of specific political, military, and logistical aspects of the mission and the deployment of peacekeeping forces to fulfill the operation’s mandate. Tactical planning is the responsibility of the Head of Mission, the Department of Peace Operations, and the Department of Operational Support (United Nations, n.d.). Again, because modern peacekeeping missions are essentially military operations, they require many of the same tactical-level functions as traditional state-led military operations: establishment of operational guidelines for soldiers; strategic plans to achieve the mission’s objectives; formation and consistent execution of daily operation protocols; successful completion of military directives; etc.

Additionally, UN Peacekeeping operations face a myriad of unique problems that most other militaries never encounter, many of which are manifestations of inefficiencies and issues that originated at the strategic and operational levels. Innumerable tactical challenges exist in peacekeeping operations but, in the interest of time, this section will focus specifically on tactical challenges that are derived directly from the multinational composition of peacekeeping forces.

Challenges that Result from the Multinationalism of Peacekeeping Forces

While it is easy to conceive of the Blue Helmets as a single, united force, it is important to remember that the UN is not an autonomous actor, and its peacekeeping forces are not a unitary entity. The UN Charter does not allow for a standing army, so member states voluntarily contribute soldiers for PKOs (UN, n.d.). UN Peacekeepers are primarily soldiers of their national army; “they wear their countries’ uniform and are identified as UN peacekeepers only by a UN blue helmet or beret and a badge” (UN, n.d.). The multinational composition of peacekeeping forces poses endless obstacles to the successful implementation of tactical-level operations.

The most obvious issue resulting from the multinational composition of UN Peacekeeping forces is the prevalence of language barriers. Blue Helmets come from all over the world, and while soldiers are most often grouped with other soldiers from their home country, the coordination of troops who don’t share a common language is an immense tactical issue. Peacekeeping operations also necessarily, “involve interaction between military personnel and local populations as well as interaction between militaries and with NGOs from various parts of the world” (Tomforde, 2010, p.450). An inability to easily communicate with local actors and allied organizations presents obvious challenges for any military force, but is an especially large obstacle for the Blue Helmets who are expected
to promote peace and remain nonviolent, if possible. Inevitable language barriers resulting from the multinationalism of UN Peacekeeping forces aren’t the only obstacle posed by the fragmented composition of the Blue Helmets. The multinational nature of UN Peacekeeping operations makes intercultural interactions inevitable, which can result in miscommunication, especially in conflict situations. While it is common to underestimate the importance of cultural dimensions in a military operation, research shows that frequent, “operational problems arise due to cultural misunderstandings between peacekeepers from various countries” (Tomforde, 2010, p.450). Intercultural communication issues, both among soldiers and between Blue Helmets and local populations, can result in disastrous, and even deadly, consequences for peacekeepers and civilians. For example, the deaths of US and Malaysian soldiers in Somalia in 1993 under UNOSOM II, while caused by multiple factors, have been attributed partially to cultural misunderstandings and insufficient intercultural communication (Razak et al., 2018, p.88). Thus, it is important to not undervalue the gravity of cultural dimensions within peacekeeping operations, as “competency constraints and cultural differences are vital issues in military operation” (Razak et al., 2018, p.89).

Other tactical challenges derived from the multinationalism of UN Peacekeeping forces involve the training and mission execution of international soldiers. A study of multiple national armies’ performance of day-to-day operations during the UNIFIL II peacekeeping mission in Lebanon documented, “systematic variations in the way French, Ghanaian, Italian, and Korean units implement the mandate of the UN mission in Lebanon in their daily military activity” (Ruffa, 2014, p.199). This obviously creates significant tactical issues and prevents the UN Peacekeeping force from successfully achieving its mandate. Thus, lack of consistency in training can result in considerable disunity among peacekeeping forces and create barriers to communication and tactical success.

In sum, while UN Peacekeeping missions face the same tactical challenges as traditional state armies in their execution of military operations, they also must contend with countless tactical challenges unique to the nature of UN Peacekeeping. Many challenges on the tactical level are derived from issues that have trickled down from the strategic and operational levels, while others are unique to the planning and execution of on-the-ground operations. One of the most significant challenges facing UN Peacekeeping operations is the inevitability of a fragmented army due to its necessarily multinational composition. This causes various issues including, but not limited to, language barriers, intercultural communication challenges, inconsistent training, and variations in the ways in which individual state armies implement the UN mission’s mandate. While some of these tactical issues are unavoidable within the current requirements of the UN Charter, others result from systematic failures at all levels of the UN Peacekeeping structure, resulting in frequent mandate implementation issues and an overall lack of efficacy at the tactical level.

CONCLUSION

While UN Peacekeeping has achieved commendable successes throughout history, it is far from a perfect system and is unfortunately plagued with inefficiencies at every level of operation. Issues established at the strategic level – most notably a significant lack of structural and doctrinal clarity – create far-reaching fog and friction throughout the entire organization. Issues established at the operational level – both problems derived from strategic level shortcomings and specific operational problems, such as a drastic lack of intelligence capabilities – encourage further confusion in peacekeeping operations. Finally, issues at the tactical level – those derived from strategic and operational level issues and those specific to the tactical level, such as a necessarily fragmented multinational peacekeeping force inhibiting communication – cause serious implementation issues and prevent the successful execution of the mandate.

In conclusion, UN Peacekeeping faces significant challenges at each level of war – strategic, operational and tactical – which cause fog and friction throughout the entire organization. The UN’s current and historic incapacity to overcome these challenges has resulted in an overall lack of efficacy at each structural level (each level of war) of UN Peacekeeping. Thus, while UN Peacekeeping has seen some past successes in its history, the systematic challenges it consistently faces, coupled with the increasing complexity of global conflicts – driven by the increased prevalence of intrastate wars, failing states, and multidimensional global conflicts – calls into question UN Peacekeeping’s ability to reliably deal with modern-day global conflicts.
BIBLIOGRAPHY


About the Author

Megan is a third-year double major in Global Studies and Political Science in the Honors Program at UCSB. She is passionate about human rights and global development and plans to pursue a graduate program in global development policy after graduating UCSB. Her primary professional goal is to work with international nonprofit organizations to make substantial impacts on the lives of people in need and strengthen the international community’s capacity to contend with the coming challenges of the future.