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The Proceedings of GREAT Day Volume 15

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The Proceedings of GREAT Day

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The Proceedings of GREAT Day

Geneseo Recognizing Excellence, Achievement, & Talent is a college-wide symposium celebrating the creative and scholarly endeavors of our students. In addition to recognizing the achievements of our students, the purpose of GREAT Day is to help foster academic excellence, encourage professional development, and build connections within the community.

Established in 2009, *The Proceedings of GREAT Day* journal compiles and publishes promising student work presented at SUNY Geneseo's GREAT Day symposium. The projects, presentations, and research included here represent the academic rigor, multidisciplinary study, and creativity of the students taking part in the SUNY Geneseo GREAT Day symposium.

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The Proceedings of GREAT Day

Volume 15

Creating a Podcast: Research About Reproductive Justice Accessible to the Public

Taylor Hansen

sponsored by Jennifer Guzmán, PhD

Abstract

In this paper, I will explain how I created a podcast about the findings from my research about reproductive justice. In this study, reproductive justice was understood as the right to have children, the right to not have children, and the right to have children in a safe and dignified environment. Starting from recommendations about what efforts should be made to promote reproductive justice, this project sought to find out what grassroots organizations are currently doing. In order to understand how grassroots organizers are addressing reproductive issues today, I interviewed eight leaders who are conducting this work in Western New York, predominantly in Rochester and Buffalo. From this work, three main findings emerged. The first is that there is an extensive list of barriers that prevent people from accessing reproductive health care including limited clinics, lack of transportation, crisis pregnancy centers, and limited funding. Secondly, grassroots organizations and health care providers are working to combat these barriers by encouraging voter registration, expanding clinic hours, increasing education, and centering Black and Brown bodies in the work they do. Finally, it was clear that the leaders I interviewed center joy in their fight to make care accessible to all. I was motivated to make these results accessible by creating a podcast. The main goal was to communicate my research process and share the results in a way that could be understood by anyone.

Introduction

In the United States, especially since the overturning of Roe v. Wade on June 24th, 2022, reproductive rights have resurged as a contentious topic. Much of the debate centers around whether abortion should be legal. Since the Supreme Court's decision left the states to decide the legality of abortion, 14 states have completely banned abortion, and others have placed severe restrictions on the procedure. However, in New York State, the medical decision to obtain an abortion remains legal. In fact, in 2019, the New York State Senate passed New York's Reproductive Health Act which ensures that New Yorkers maintain their right to abortion, even if federal

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decisions attempt to limit abortion access (New York State, n.d.). Though abortion remains legal and protected in New York, it is not necessarily accessible to all people. In other words, legality does not correlate to accessibility.

As inability to access reproductive health care has become a growing concern in the United States, there have been many suggestions about how society can provide reproductive rights and health services to all people. Advocacy grassroots organizations have taken the lead in terms of promoting and implementing change to combat reproductive health inequality. Grassroots organizations are groups of people in a community that work together to implement change at the local level, essentially from the ground up. This project documents the trajectory of a research study that I conducted about the fight for reproductive justice in Western New York, and the steps that I took after completing the study to disseminate the findings to a broad public audience in the accessible format of a podcast. Due to the importance of advocacy groups in the fight for reproductive justice, my research focused on organizations in Western New York that have strived to make reproductive health care more accessible to all people, particularly those in underserved communities. In this paper, I describe the results of my research, the process used to create *The Leaders of Social Change* podcast, and the results of the podcast. I argue that creating a podcast to more widely distribute my findings was vital for sharing how grassroots organizers are leaders of social change whose efforts are the foundation for achieving equal access to reproductive health care for all people.

Social and Historical Context

The ability to access not just abortion, but any type of reproductive health care, is limited by many factors. Barriers to access are wide-ranging and depend on the resources that individuals have available to them. Therefore, those with more privilege, and ultimately more resources, typically have greater access to reproductive health care services. This is a major reason why people of color and low-income individuals experience disproportionately high rates of negative health outcomes, especially in terms of reproductive health. Research published in 2022 reported that maternal mortality per 100,000 births was nearly triple for Black women as it was for white women in 2021 (Hill et al., 2022). The same report shows that infant mortality per 1,000 live births was more than twice as high for Black infants as it was for white infants in 2020 (Hill et al., 2022). Though these are only two statistics, Black women tend to be at the top of the disparity chart in many categories of reproductive health. To understand the ways in which birthing people of color, particularly Black people, are treated in the United States today, the history that made the mistreatment of Black women all too common must be acknowledged. Slavery, the violation of Black bodies in the advancement of gynecology, and forced sterilizations are some of the ways in which women of color have been, and continue to be, oppressed in American society.

Even within the Women's Rights Movement, women of color have often been overlooked. This is largely because white women, who appointed themselves to lead the

movement in the second half of the 20th century, did not focus on the needs of women of color. Often, they assumed that all women were fighting for the same rights, when in fact, they were not. Many organizations that were run predominantly by white women overlooked the effects of intersectionality, which can be defined as the ways in which multiple identities intersect and contribute to the ways people are viewed and treated in society. Intersectionality shapes how women of color experience multiple burdens in unique ways that cannot be precisely described or understood by acknowledging the effects of only racism, or only sexism (Laster Pirtle & Wright, 2021).

The unfair treatment of women of color, even within efforts supposedly for women's rights, is the reason that the reproductive justice framework was coined by a group of Black, female leaders in 1994. The goals of reproductive justice are for all birthing people to have the rights to have children, to not have children, and to have the ability to raise a child in a safe environment with adequate resources (Kapadia, 2022). Reproductive justice uses an intersectional lens to acknowledge that power and inequality perpetuated by social institutions oppress women of color in ways that white women do not experience (Else-Quest, French, & Telfer, 2022). This framework seeks to broaden the scope of reproductive autonomy by acknowledging that for people to have full autonomy over their bodies, they need significantly more than just the legalization of abortion. Reproductive justice efforts attempt to center the voices of those who are most affected by various barriers, keeping in mind that only when full reproductive autonomy is available to them, will it be available to all people.

Methods of Reproductive Justice Research

Though the focus of this paper is about creating *The Leaders of Social Change* podcast to share research findings, it is first valuable to understand the research question, methods, and results to understand why I was so dedicated to creating a more accessible medium through which to understand my research. In my research, I specifically focused on how advocacy groups and health care organizations in Western New York utilized reproductive justice to make reproductive health care more accessible to all people, especially those in marginalized populations. To answer this question, I sought out leaders of healthcare and grassroots organizations in the Rochester and Buffalo areas of Western New York. I successfully interviewed leaders from four organizations: Reproductive Care Now, Rights for Women, Coalition for Justice, and Students for Reproductive Justice. These organizations were chosen because they each explicitly stated that one of their goals was to promote reproductive justice for all people. I recruited participants for this project by email and once contact was made, I scheduled interviews at times, locations, and formats that were convenient for the interviewees. By the end of my fieldwork, I had interviewed eight people in six separate settings. Two interviews were conducted in person, three were conducted virtually, and the final interview was a group interview with three leaders conducted virtually. Each interview was around an hour long, with some variation of longer or shorter interviews. In total, approximately six hours were spent conducting the interviews,

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not including the time it took to schedule the interviews or travel to them when necessary. Soon after each interview was completed, I created interview logs in which I transcribed quotes and dialogue that were significant. As I completed each interview log, it became clear that there were certain topics that the interviewees found to be very important and it was these topics that eventually became the main findings of the research.

Overview of Findings

Three main findings emerged from my interviews with the eight leaders. The first main finding is that there are many barriers that prevent people from being able to access reproductive care. Every individual I interviewed talked extensively about what stands in the way of people obtaining reproductive health care despite these services being legal in New York State. According to many of the interviewees, legality is not the only conversation we should be having in regard to reproductive rights. Barriers to reproductive health care include, but are not limited to: limited providers and clinics, lack of transportation, lack of funding, and the existence of crisis pregnancy centers, where abortion is strongly discouraged. Interviewees referred to these centers as "fake clinics." Based on my interviews with the leaders of four organizations who promote and fight for reproductive justice, it is clear that large and small barriers stand in the way of people accessing the care they need and deserve.

The second main finding that emerged from analysis of the interviews was in regards to the efforts of these organizations to promote reproductive justice. Activism efforts varied depending on each organization's goals and capacities. Though priorities differed, it was evident that each of these organizations was working tirelessly to promote reproductive justice in Western New York. Major efforts included: promoting voter registration, increasing education about sexual and reproductive health, expanding clinic hours and increasing the number of providers, destigmatizing reproductive health care, and centering Black and Brown bodies throughout the fight for reproductive justice. Notably, all eight interviewees shared the conviction that there is immense value in working together to fight for reproductive justice.

The third and final main finding that emerged from the interviews was in regards to what keeps these healthcare providers and grassroots organizers fighting for reproductive justice, despite the difficulties associated with social justice advocacy. I titled this main theme "Centering Joy" based on a quote from one of the interviews. Despite the burnout and frustration that many feel, they continue to push through these difficulties because they are enthusiastic about caring for others. For these leaders, caring for others took the shape of fighting to make sure all people have the ability to make informed choices about their reproductive health as well as have full autonomy over their bodies. Despite facing hardships and setbacks, the interviewees continue to persist every day and center joy in the work they do fighting for the basic rights of all people.

Why Podcasting?

Anthropology, according to Kenneth Guest (2018), a professor of anthropology at Baruch College, is, "the study of the full scope of human diversity, past and present, and the application of that knowledge to help people of different backgrounds better understand one another." There are many subfields of anthropology and though this definition is very general, it does get at the heart of the discipline. As a student of anthropology, I view it as a field that seeks to learn about people from the perspectives and voices of those people. Public anthropology is essentially taking anthropological research and making it available to a widespread audience, including people outside the field of anthropology. The concept of public anthropology, combined with my dissatisfaction with how limited my audience was, inspired me to create *The Leaders of Social Change* podcast as a means of making my findings about reproductive justice available to everyone. This medium is accessible regardless of academic background or other barriers that may prevent people from understanding and accessing the information.

Public anthropology can take many forms as it is considered any research that is conveyed in an accessible way to wider audiences. Why then, did I decide to create a podcast? First and foremost, I personally enjoy listening to podcasts. Sometimes I listen to podcasts for entertainment and other times I do so for educational purposes. Regardless, I find them to be engaging and informative. This personal connection to the medium was the initial reason that I sought to create my own podcast as a method of sharing my research.

Additionally, I was inspired to create a podcast based on two podcast episodes that I listened to featured on *AnthroPod*. *AnthroPod* is the official podcast of the Society for Cultural Anthropology, which is a section of the American Anthropological Association. The first episode is titled, "52. Anthropologists as Public Intellectuals: Kristen Ghodsee & Ruth Behar in Conversation" (Behar & Ghodsee, 2019). In this episode, Dr. Kristen Ghodsee and Dr. Ruth Behar discuss what it means to be a public intellectual. According to Behar, being a public intellectual means "...being able to share intellectual ideas with a wide public, some of which, some of that public might be in academia" (Behar & Ghodsee, 2019). Further, the women point out that it is important to recognize that even though people may not be involved in academia, or may be involved in fields outside of anthropology, many individuals are capable of understanding concepts outside of their own specialized fields as long as public intellectuals meet them halfway. In other words, the framing and modes of sharing academic and professional work are important determinants of whether people will be able to understand and access it. Further, the anthropologists in this episode spoke about their belief that knowledge should be available to the general public. Behar explains:

> ...for me I think it comes maybe from a deep sense of democracy, that our knowledge should be available to all and that as those who produce

knowledge we should try to make it available as we can to all. (Ghodsee & Behar, 2019)

The second podcast episode was titled, "70. What Does Anthropology Sound Like: Podcasts" (Hak Hepburn, 2023). In this podcast, three anthropologists were interviewed about their personal podcasts. Dr. Maria Eugenia Ulfe Young, Dr. Dominic Boyer, and PhD candidate Anuli Akanegbu discuss the podcasts that they created and currently utilize to share their anthropological research. There were three key points that stood out to me in this episode that addressed why podcasting is a useful method for sharing information. One key point was that podcasting itself is inherently anthropological. Dr. Maria Eugenia Ulfe Young explained, "...voices speak directly to the person who listens. And that is what we do in anthropology. We put people in the center, and we listen to people. That's how we do research" (Hak Hepburn, 2023). Podcasting is a means in which the researcher can center their voice in the process of sharing their work, as well as center the voices of others involved. The second key point that stood out from this podcast episode is the anthropologists' emphasis that podcasting is valuable because anyone can do it. Podcasting does not require specific expertise to complete because podcast platforms exist that walk podcasters step by step through the process of uploading and potentially editing the recordings. Akanegbu explained the various skills she had to acquire in order to write scripts, edit recordings, produce the podcast, and cast individuals to be involved in her podcast (Hak Hepburn, 2023). Though gaining the skills to create and produce her podcast took time and effort, Akanegbu was successful in her efforts, despite not having had prior experience distributing her work through this medium. Akanebgu's experience goes to show that any person can create and distribute a podcast, including anthropologists who are not familiar with the platform beforehand. The third key point that I drew from this episode was that podcasting is an effective way to share information in an informal way. This is at least in part because podcasting utilizes an audio modality to share information instead of a written modality, contributing to a feeling of effortlessness in contrast to written work that has the added labor of reading. Additionally, sharing academic work in an informal, casual way can make the information seem less intimidating and therefore more accessible. Dr. Dominic Boyer explained:

> ..for most of us, the way we speak informally is quite a bit different than how things look on the page…That actually is a way that we can meet an audience halfway who may be rather intimidated by some of our written work but actually could find a spoken version of it very engaging. (Hak Hepburn, 2023)

The audio modality of podcasting can help to overcome barriers that may contribute to academic work being inaccessible by meeting the audience halfway.

Methods to Create Podcast

The process utilized to create the podcast was relatively straightforward. The first, and most important, aspect of creating the podcast was the creation of a script. To create the script, I used my capstone paper from my research about reproductive justice efforts in Western New York as source material. Essentially, I transformed my research paper into a podcast script that was divided into five shorter segments that people could listen to in a sequence either all at once, or in shorter settings. Rather than creating one 50-minute-long podcast, *The Leaders of Social Change* consists of five shorter episodes that I split up based on themes. The most significant difference between the academic research paper and the podcast script was the type of language used. For the sake of making sure the podcast was engaging, easy to follow, and accessible to anyone, it was important that the language I used was more conversational than academic. Some methods I used to make this shift in language was utilizing contractions, defining and/or removing jargon, and strategically using verbal signposts and summaries throughout to ensure the podcast was easy to follow.

After shifting the language from an academic research paper to an informal, conversational podcast script, the next step was to record the podcast. One important aspect of recording the podcast was making sure to speak with enthusiasm. Gupta, Hamilton, and Chamot (2013) explain that to make a podcast vibrant, one should speak with a smile, a skill that certainly takes some practice. Another aspect of recording this podcast that I felt was essential was my authenticity and transparency about being a passionate student. I wanted this podcast to be a raw, truthful account of the research I conducted and how I felt about it, showing that I am no different than anyone listening to the podcast. Being authentic meant speaking with emotion and conviction, even if it meant opting to leave in a few stutters and mistakes along the way.

Once the recordings were completed to my satisfaction, I sought out a platform in which the podcast could be uploaded and accessed. Based on the user-friendly platform and simple instructions, I decided to upload my recordings to Spotify. I was required to give each recording I uploaded a title and write a brief summary about what the episode entailed. When I uploaded the first recording there were additional steps because not only was I uploading an episode, but I was also creating the *The Leaders of Social Change* podcast itself. When I uploaded the first recording and the brief summary about the episode, Spotify required me to create an introductory blurb describing the podcast as a whole:

> In Fall 2022, I conducted research to understand how grassroots organizers are addressing issues related to reproductive justice. To do so, I interviewed eight leaders from four organizations who are conducting this work in Western New York. From this work, three main findings emerged. I was motivated to make these results accessible by creating a podcast. The main goal was to communicate my research process and share the results in a way that could be understood by anyone. (Hansen, 2023)

Additionally, I was required to choose a thumbnail image for the podcast. Though I could have uploaded my own photo, there were many options on Spotify to choose from. After viewing the options on Spotify, I came across a photo of two hands, one white and one Black, holding up peace signs. The Spotify platform gave me the option to add text to the thumbnail photo, so I placed the title over the photo in a font of my choosing, ultimately creating the image of my podcast. After all five recordings were uploaded and brief summaries were written for each, the creation of the podcast was complete.

Final Product

The final product was a five part, 50-minute podcast titled, *The Leaders of Social Change*. In the introduction episode I explained why I created the podcast, why I completed the research about reproductive justice, and the methods I used to gather my data. In the second episode, titled "Barriers to Access," I discussed in depth the barriers that prevent people from being able to access reproductive health care, as described by the eight leaders I interviewed. The third episode is titled "Activism," and this is where I dove into the various ways in which each organization promotes reproductive justice. The fourth episode, titled "Centering Joy," is where I described the motivations of the eight leaders, or in other words, what keeps them fighting for reproductive justice despite the difficulties associated with social justice advocacy. Finally, in the fifth episode I explained the discussion and conclusion of my capstone paper, highlighting the importance of my findings and how they contribute to the current state of knowledge about reproductive justice. Incorporated throughout the podcast episodes is not only the reading of quotes from the interviewees as an effort to share their words and experiences, but also comments about my own experiences, motivations, and feelings about conducting the research (Hansen, 2023).

Podcasting Outcomes

The overall experience of creating a podcast was extremely positive and fulfilling for me as a researcher. There are a few highlights about my experience with this project that I feel are particularly notable. The first highlight is that as was mentioned in the second *AnthroPod* podcast episode I listened to in preparation for this project, the podcast was a medium in which I could present my research in an informal medium. The podcast turned out to be personal and informal, while also being educational and valuable. Neither the research I conducted nor the podcast I created were perfect, though they are both very authentic which I think makes it relatable to everyone, especially those that may not be as familiar with the topic of the research, social scientific research, or anthropology in general.

The second positive aspect of my experience creating this podcast is that it provided me the opportunity to not only share the methods, findings, and conclusions of my research, but it allowed me to share them with my voice. I was able to tell my story from the perspective of a student conducting anthropological research for the first

time. I could share the emotions I felt during the heartwarming and heartbreaking conversations with interviewees as well as the successes and obstacles I encountered along the way. A capstone paper alone never allowed me to share these experiences and insights. Through the words I chose and the enthusiasm I spoke with I was able to convey the immense amount of passion I felt for the research I had completed, something that academic writing does not often leave room for. This was incredibly fulfilling.

The third highlight of turning my research into a podcast was the positive feedback I have received. When I finished the podcast there were two general responses that I was hoping to receive from those who listened to it. The first was that they enjoyed it and found it engaging to listen to. The second was that they learned at least one new thing. As of March 2024, less than one year since its creation, my podcast has recieved 23 plays. According to Spotify, a play is a time that any of my episodes were streamed for at least 60 seconds or were downloaded. Additionally, as of the start of 2024, there were 12 people who followed the podcast on Spotify. Though this number may seem insignificant, and in the grand scheme it may be, prior to the creation of this podcast, only myself and my professor knew anything about my research. Therefore, my podcast has reached a wider audience even if only on a small scale. I did not seek to change the world by doing this research or creating this podcast, but I was hoping that it would impact people beyond just myself, and so far, I truly believe it has done that.

Conclusion

The research conducted on organizations fighting for reproductive justice in Western New York produced three major findings. The first is that there are many barriers that prevent people from being able to access reproductive health care. The second finding is that among the eight participants, they are advocating for reproductive justice in a multitude of ways and all supporting one another as they continue this fight. The third finding is that in the midst of this work, everyone involved expressed positivity, love, and empathy with the ultimate goal of helping people live their best lives, particularly in terms of being able to choose to have, or not have, children in the environment they wish. Finally, the third finding was that in the midst of this work, all of the individuals involved expressed positivity, love, and empathy with the ultimate goal of being able to help people live their best lives, particularly in terms of being able to choose to have, or not to have, children in the environment they wish. Since this research breaks down what grassroots organizers are combating, how they are combating barriers, and what keeps them motivated, the findings could be invaluable in terms of future policy decisions or implementation of social programs that promote reproductive autonomy. In addition to the fact that it is personally important to me that my research reaches people outside of myself and my professor, the fact that this research could have real world implications is all the more reason that this research should be made accessible to a wider audience. It is my hope that *The Leaders of Social Change* provides a glimpse into the efforts of grassroots organizers in Western New York, shedding light on their ability to unite communities around a common cause,

proving that grassroot organizers fighting for reproductive justice are true leaders of social change in this country.

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The Silent, Spoken Stress: How a Lack of Dialogue Perpetuates Vocal Issues and Lowered Quality of Life in Educators

Peighton Cervoni

sponsored by Jesse Bia, PhD

Abstract

This presentation examines the heavy burden of vocal issues and stress amongst educators in the Southern Tier of New York. Teachers are deemed one of the most at-risk groups of people for contracting vocal disorders according to the International Labor Organization (Araújo et al. 2008). Female teachers are disproportionately affected by vocal issues as caused by both biological and sociocultural factors. This disproportion then translates into their teaching, which then in turn affects their students' learning and their job satisfaction. By incorporating evidence from articles, personal correspondence, and formal interviews with educators of various concentrations, this study demonstrates that teachers suffer from both a pattern of self-blame and an overall lowered quality of life revolving around their vocal disorders. It argues for the incorporation of education and awareness on vocal hygiene within educator's preparatory training and through their teaching career. These are particularly evident in the lack of dialogue and knowledge about vocal discomfort within college preparation and career, which creates a lack of awareness in understanding what the symptoms of occupational dysphonia are. These together enforce feelings of self-doubt and blame in teaching capability and lowers job satisfaction, culminating into a lowered quality of life.

Occupational Dysphonia Syndrome (ODS) has been a widely recorded phenomenon amongst teachers in all levels of education. Occupational dysphonic syndrome describes functional dysphonia in professional voice users and was named in 2010 by Almeuda and Pontes to evaluate dysphonia caused by occupation (Korn et al., 2016). ODS is characterized by five symptoms including hoarseness, pain or irritation in the throat, neck pain, foreign body sensation, and clearing of the throat (Korn et al., 2016). Research has shown teachers are a growing concern for developing voice-related problems caused by their profession. The International La-

bor Organization considers teachers to be the category of greatest risk of contracting a professional voice disorder (Araújo et al., 2008). There is a high prevalence rate for vocal problems amongst the teaching community, fluctuating around 39.6% of teachers experiencing (ODS) (Korn et al., 2016), and 17% experience vocal problems with at least two symptoms weekly (Grillo & Brosious, 2018). The teachers at the highest risk are physical education teachers and music teachers (Grillo & Brosious, 2018).

There is an abundance of factors that contribute to the development of vocal problems in teachers, stemming from both biological and social differences. Biological factors include sex differences, age, and untreated and/or uncontrolled health problems within educators themselves. This is important to consider as student teachers often experience vocal problems early in their career due to a lack of experience and coping strategies in the new classroom environment. As noted in Meulenbroeka et al. (2010), Simberg et al. showed that university students in general, report frequently occurring vocal symptoms, but 20% of the students studying to become teachers in comprehensive schools reported more and severe vocal symptoms and 19% had organic voice lesions. Social factors include gender, as most vocal problems are described by teachers identifying as a woman. Female teachers report significantly more acute and chronic vocal issues when compared to male teachers (Meulenbroeka et al., 2010). This may be in part because female teachers often utilize their voice as an attention-grabbing tool compared to males (Araújo et al., 2008). However, the largest contributing factor is a lack of awareness, preparation, and education in student and tenure teachers during their educational training during both college and their professional career (Niebudek-Bogusza et al., 2008).

Occupational dysphonia provides many barriers between teachers and their ability to have a higher quality of life. Voice issues caused by their occupation had an influence on sick leave, psychological distress, and overall quality of life (Meulenbroeka et al., 2010). Absenteeism in teachers is close to double that of recorded absences in other professional voice users (Meulenbroeka et al., 2010).

The impact of a teacher's personal health also translates into their teaching and has effects on students. This has been shown to negatively affect teachers' performance in teaching activities, constitutes a permanent source of frustration, dissatisfaction, and stress, and, not infrequently, temporary, or permanent withdrawal from career (Araújo et al., 2008). This contributes to an overall decrease in life quality for educators and interrupts the teaching-learning process (Araújo et al., 2008).

Based on previously published research concerning occupational dysphonia in educators, although vocal issues are well documented and recognized in teachers, there are few documented examples of successful prevention programs at both the college training and professional education career level. Furthermore, although research describes a decrease in life quality in educators, it lacked personal examples of how this problem affected teachers within their personal lives. In a society where educators are often ignored and underappreciated, failing to act and acknowledge their struggle

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with their voice can be extremely detrimental to their overall life quality and desire to continue teaching. One of the best means of preventing vocal issues in teachers would be to address these shortfallings in teacher preparatory training and open a dialogue about these issues. This research paper looks to fill gaps in information concerning the direct impact of vocal disorders on their emotional well-being and life satisfaction, as it will help readers understand how large of an impact occupational dysphonia has if it remains unaddressed by teacher preparatory training and in school districts.

In this paper, discussion will take place on how a lack of dialogue concerning vocal hygiene awareness and education for teachers creates a cycle of self-blame in educators. It goes on to describe how that cycle of self-blame along with the effects of occupational dysphonia leads teachers to have a lower level of life satisfaction and overall life quality.

Literature Review: The Causes and Effects of Vocal Disorders in Teachers

A lack of awareness of the prevalence of vocal issues in teachers, and care of the voice as a tool, are the leading causes of vocal problems in educators. In the study completed by Grillo and Brosious (2018), results showed that teachers with less professional experience had a decreased awareness of the vocal demands that come with being an educator and there was a tendency for student teachers to underestimate the vocal demands required for their future profession (Meulenbroeka et al., 2010). Furthermore, there is an abundance of literature on intervention practices to mitigate the effects of vocal stress in teachers but a lack of literature regarding the prevention of said vocal problems, or the effect of prevention programs. Most literature generally focuses on teachers who have already experienced the taxing vocal demands of the teaching profession, or already have an existing voice problem (Grillo & Brosious 2018).

Interestingly, most vocal issues are perceived as vocal behavioral disorders rather than a disease of the vocal organs. This means that a lack of awareness may account for behaviors that prolong misuse and damage to the vocal organs (Lee et al., 2019). Since vocal problems initially manifest as a hoarse voice that is uncomfortable and unstable, it is variable at which point vocal nodules and other impairments to the vocal cords become pathological because it depends on the individual's perception of their voice and vocal demands (Pederson & McGlashan, 2012).

Most vocal problems are reported by female teachers and because of this, many studies include control and testing groups made of only female teachers. In a study by Korn et al. (2016), results showed that a higher prevalence was among women, with 62.7% of cases being in women versus 43.5% in men. This gender difference in prevalence was hypothesized to be caused by physiological properties including potential hormone differences in men and women, less tissue mass in females than men, and less hyaluronic acid for wound healing in females compared to males (Grillo & Brosious, 2018; Birchall & Carding, 2019).

Aside from physiological hypotheses, social influences have also been hypothesized. Female teachers utilize their voice as an attention-grabbing tool more often than male teachers to 'win over' the audience (Araújo et al. 2008). Personal behavior, as well as the management of stress and anxiety, are also contributing factors to the gendered difference (Hunter & Banks, 2017). Another social factor worth noting is the high ratio of female teachers to male teachers in general (Martins et al., 2014).

The occupational environment is a major contributing factor to the onset of vocal issues for educators. Factors directly related to occupational dysphonia include teaching time, work organization, noise competition in the work environment, air pollution-related stress, anxiety in the work environment, tension, personal habits, and quality of life (Korn et al., 2016).

On average, a teacher talks for roughly 102 minutes per eight hours of work (Pederson & McGlashan, 2012). Vocal fatigue is partially attributed to the monologue style of talking adopted by most teachers, which often allows for little vocal rest (Titze et al., 2007). Furthermore, a higher prevalence was recorded in teachers who work in challenging and unbearably noisy environments versus peaceful and quiet ones (Korn et al., 2016). As noted in Pereira et al., (2015), Alves et al. also interviewed 126 teachers and found a direct relationship between vocal symptoms, lengthy workdays, dusty and dry atmosphere in the classroom, and upper airway infections.

Teachers working in loud, stressful environments are the most at risk for developing vocal issues and there is an abundance of literature to support this claim. Evolutionarily, humans utilize their own auditory feedback as a neural basis for maintaining vocal stability and vocal modifications. The changing of one's voice subconsciously to adapt to the external environment is referred to as the Lombard reflex (Lee et al., 2019). Noisy environments then affect the fluctuations of vocal frequency, pitch, and speech fluency, which all are linked to a greater risk for voice problems (Lee et al., 2019). In 2002, the American National Standard Institute recommended that background noise present in unoccupied classrooms be at or below 35 dB(A) and reverberation times remain <0.6 seconds in small classrooms and <0.7 seconds in larger classrooms. Banks et al. (2017) found that most school classrooms (87.5%) do not meet either of these requirements. Leppänena et al. (2009) found that teachers reported less vocal fatigue at the end of a workday when using an electric amplifier in classrooms; however, this is generally an accomodation for students who are hard of hearing.

The manifestation of these occupational voice disorders also has implications for the personal lives of teachers. Many of these vocal tract issues commonly lead to lost time at work, reduced productivity, and an overall impaired quality of life (Birchall & Carding, 2019). Many of the symptoms are carried home with teachers. In a study of 747 teachers from the municipal school system in Vitória da Conquista, Bahia, Brazil, teachers reported sensations of dryness (66.5%), itching (51.5%), throat clearing (49.7%), pain (43.6%), burning (39.4%), and sensation of tightness or lump in the throat (30.7%) (Araújo et al., 2008).

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Absenteeism in teachers caused by vocal discomfort and problems was found to be double that of other vocally demanding professions (Meulenbroeka et al., 2010). In the study conducted by Grillo and Brosious (2018), results showed 19.2%–23% of teachers reported being absent for at least one day of work due to voice-related dysfunction. Emotional health is also affected because this is a root cause of permanent frustration, dissatisfaction, stress, and potential withdrawal from the teaching profession (Araújo et al., 2008). Hunter and Titze (2010) completed a survey of 237 teachers from across the United States and over 50% of teachers reported their voice being a chronic source of stress and frustration that has impacted their ability to teach effectively.

There is also wide variability in treatment routes for each patient. Treatment for vocal stress and dysphonia includes both surgical and non-surgical avenues (Pedersen et al., 2012). In medical practice, there is generally no distinction between patients who require surgical treatment versus non-surgical treatment; however, clinicians will generally endorse voice therapy for primary treatment of vocal issues and reserve microsurgeries for cases in which vocal limitations persist after behavioral management (Birchall, Carding, 2019). However, Thomas et al. (2007) found that management and treatment for voice handicaps are best when multidimensional and highly personalized to address all factors that subjects perceive as a risk.

Methodologies

This research utilized questionnaires and professional interviews to collect data. Questionnaires were optional and the first step in recruiting research participants. They included fifteen questions that varied between short answers and yes/no responses. The goal of these questions focused on gaining background information and interest from potential participants. This included questions pertaining to how long they had been teaching, what subject they teach, their age, their gender, and knowledge on vocal disorders in teachers. At the end of the questionnaire, participants could mark if they were interested in completing a formal interview. Responders who indicated an interest in an interview and had a history of vocal issues were contacted via email to set up a formal interview time slot. Other factors that were looked for were if they were a physical education teacher, a chorus teacher, and a student teacher/young teacher because they are the most at risk for developing occupational dysphonia. These responses were chosen for interviews because they could expand on their experience of having a vocal issue and were willing to. Information gathered through the questionnaires were then used as the foundation for interview questions where participants could expand on their responses and experiences with vocal disorders as an educator. This questionnaire was dispersed to teachers amongst two school districts in the Finger Lakes region, with further dispersal occurring from responders passing on the questionnaire to their own relations and via researcher connections. This gathered 34 responses in total.

Once interested participants were established, formal interviews could occur. Formal interviews were conducted both via digital platforms and face-to-face, with a 50/50 split of total interviews occurring between both. All formal interviews were audio-recorded via Zoom. Formal interviews occurred once and were built around the information gathered from the recruitment questionnaire. Interviews were conducted with eight teachers varying within the primary and secondary levels of education. Of these eight teachers, seven of them were women ranging from the ages of 25–43. The eighth teacher interviewed was a male teacher with a history of vocal problems who falls within the same age range. The teaching experience of the participants ranged from 3–22 years. Of the seven women, two of them were physical education teachers and one was a chorus teacher, the two types of educators most at risk for developing occupational dysphonia. The chorus teacher also had experience with vocal training from a voice coach during her preparatory education as a chorus teacher, but only for prepping the voice for continuous singing. The responses with the most focus during the interview were those connected to the quality of personal lives outside of teaching and the obstacles and emotions revolved around seeking help and completing vocal hygiene habits.

Participant observation was originally planned to record and observe other variables that cause noise competition in the classroom while completing the formal interviews. However, due to the inability to be around children, the limited availability for teachers to meet at the beginning of the school year led to participant observation being cut from the research.

Fieldwork and Findings

Pattern of Self-Blame

While completing interviews for this project, it was astounding how many teachers failed to realize the weight of vocal issues caused by teaching, on the teacher population. Many teachers pictured this issue only on an individual plane, where it was a fault within themselves that prevented them from feeling comfortable or unable to teach due to vocal strain. There are a few key ways this pattern of blame was conveyed throughout interviews, including a lack of awareness of the issue, the use, or lack thereof, of technological accommodations in the classroom, and misinterpreting the manifestation of vocal issues to be caused by 'bad' personal habits. Feelings of blame and frustration also increased tenfold with the COVID-19 pandemic of 2020 and masking requirements while teaching.

The lack of greater awareness of this issue is highlighted by many teachers interviewed describing a traditional cycle of vocal stress. The cycle often described a period of intense vocal strain upon the first two weeks of school following summer break, around holidays, and during cold and flu season. Michelle, a 42-year-old, junior high physical education teacher, described this cycle as starting in "September when, you know, my voice has been resting all summer long. And then it'll cycle back through in January

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time. So right about the time everybody's getting all their colds." Kelly, a 36-year-old, sixth-grade social studies teacher recalled a similar pattern, mentioning that vocal issues are a constant "in the beginning of the year, or around holidays, especially when you end up talking more. It's a lot of you just getting your routines and expectations down with [the students]. So, it's definitely a lot and after having the whole summer off, you're just easily exhausted from it." Although all teachers described a similar pattern of vocal stress, there was no drawn connection between cases of vocal dysphonia in teachers because there was no ongoing discussion making teachers aware that these times of the year are stressful on their voice.

Since teachers often don't have the chance to share their vocal experiences with other educators, it's only in times when teachers have serious problems with vocal strain, that requires them to seek medical help, that the vocal issue, as a whole, is illuminated. This was the case in one of the school districts I distributed the recruitment form to, as my mother worked at this district and dealt with vocal nodules and a treatment period of over two years. Michelle recalled "Yeah, I didn't really put pieces together until I started talking to your mom and she told me, 'you know, that's a real thing. You should talk to an ENT about it.' She talked to me about what she went through, and the voice therapy and all of that stuff. And so then it all started to kind of make sense." Kelly had a similar experience of finding awareness through someone else seeking medical aid, saying "It was definitely eye opening that I mean, I noticed that my voice would feel tired or sore, but it was really that you're not made aware of it beforehand."

This highlights a pattern of "learning the hard way," as put by 43-year-old chorus teacher Cathy, where teachers or their coworkers must first be pushed to the brink of vocal failure for their problems to be seen. Since teachers are left to their own thoughts and interpretations of why their voice is failing from a lack of dialogue and teacher aid, they often begin to internalize and blame themselves. David, a male, ninth-grade English teacher, spoke on how his vocal strain from teaching led him to a self-blaming mindset when he was unable to sing for his side gig, saying "my voice was so weak. And I felt, you know, doubt, and blame and shitty about it. I just was like, this sucks."

Another variable that highlights a pattern of self-blame in teachers revolves around the use of technological accommodations that help project the user's voice. Self-aimed blame was a result of both needing to purchase accommodations for oneself to help project their voice within their classrooms, and when teachers chose not to utilize provided accommodations by schools, or themselves, because they hindered the ability to teach effectively.

Many teachers who were interviewed found themselves purchasing technologies such as amplifiers, speakers, and bells out of an inability to effectively use their voice to teach. Kelly described some technology she purchased, including a microphone headset and speaker to help project her voice in the classroom. She claims they are useful, saying, "Big time. You can adjust the volume on that, you can record yourself and then you just pretty much speak into it." Considering Kelly purchased this to help

with how tired her voice was while teaching without asking the school for aid or funding first, she saw this as a personal issue that she must address by herself, placing blame for discomfort on herself if she did not purchase these accommodations.

Jenny, a 25-year-old, sixth-grade science teacher, also described her experience with purchasing a vocal accommodation for herself: a digital bell. She characterized the technology as a nonverbal means of communicating on days when she feels her voice is weak. "I said at the beginning of all my classes 'I can't yell at you today. My throat really hurts from being loud and yelling all morning.' I want to make sure [the warning] is there. I'll do them together and I'll have a nice nonverbal cue." She went on to describe her bell-ringing system where "one-ding means be quiet. Do it the second time, we're gonna have a problem." The system appears to be fault-proof most of the time, but some days kids don't respond positively to the bell. "Today I was just, like, 'be quiet' and dinging [the bell] a bunch of times. And it just gets to a point where I just end up having to yell anyway." In the case of Jenny, she is experiencing stress and self-aimed blame because although the technology helps preserve her voice, it is ineffective at communicating messages to children, which ends with her harming her voice more to wrangle students who are out of control because they misunderstand or ignore her nonverbal cues.

Technological accommodations for projecting the teacher's voice are often reserved for helping students who have trouble with their hearing. However, some schools provide their teachers with certain technologies depending on the environment in which they are teaching. Alex, an elementary school physical education teacher in her mid-thirties, described how her school provides her and coworkers with speakers around the gymnasium. She described how although it was better for projecting her voice in the large space, it failed to give children a person or place to focus their attention, leaving them distracted and more prone to starting conversations during Alex's teaching. She stated, "What I find happens because the sound is loud, it comes from everywhere, that kids tend to not pay attention when you use it. Where if it's me talking, they have one central location that they must look at. So, they have resources, I choose not to use them, because I find that the kids don't pay attention as well." In this case, Alex is shifting blame for her voice problems on herself because she chooses not to use one kind of vocal accommodation because it provides a less effective learning environment for her students.

Some teachers, as stated before, often will purchase their own vocal accommodations to help themselves where they are failing with their voice, often for projecting their voice in their teaching spaces. Like Alex, another physical education teacher, Michelle, has accommodations that she purchased for herself that she chooses not to utilize because it is not efficient for her teaching. Michelle described how she purchased technologies with her personal funds for about $60 which included Bluetooth speakers with a microphone that clips to the user, but it provided similar challenges during teaching as Alex's experience. "I have to carry a speaker and sometimes the technology of it all just makes it not practical. The range on it is great for the gym, bad for any-

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where else. I would try and put the speaker in the center of the gym, but then if I was like over here, and all of a sudden my voice is over there, it would just totally throw [the students]off like that." Michelle then places blame on herself because she chooses to value her student's learning experience over retaining and protecting her voice.

Due to a lack of awareness about issues caused by stress on the vocal cords while teaching, many teachers often look to justify their feelings of discomfort by reflecting on habits that may be deemed as unhealthy and/or aspects of their identity that may contribute to their vocal stress. This phenomenon creates more feelings of blame and inadequacy as many teachers blame themselves for not following through and changing their behavior, without considering how their career is a basal cause to the issue. Rather, many of these habits and behaviors continue the damage already caused by their job as educators.

Cathy gave some insight on how outside habits and aspects of one's identity can perpetuate and worsen one's vocal strain. Having lived through a long process of learning to cope and control a severe case of GERD while also juggling allergies and being a chorus teacher, she had plenty of experience with her voice feeling worse due to not following mindful voice hygiene practices. She commented "With the combination of [GERD and allergies] just contributed to swelling, that plus use—gone [voice]. So even though my vocal technique was solid, those underlying issues really caused the problem or like a flare up." She continued to explain a long list of habits that she practices every day to preserve her voice as a chorus teacher, all of which required a large behavioral change. Habits included "not snacking more than two hours before bed, making sure I was getting enough sleep, that I was drinking enough clear liquids that were non-caffeinated, having an absence of diuretics, and I also started really thinking about where I was using my speaking voice in my everyday life where I can swap out [for] nonverbal cues." Cathy needed, and was able, to make behavioral changes because her form of teaching completely relied on her voice being as healthy as possible. However, many teachers may look at the list of habitual changes that occurred and be daunted by the requirements needed to preserve their voice. As described by David, "you have to almost have like this monk-like aesthetic to the way that you're living your life, unless you want to deal with the consequences of it." This perfectly illustrates the feelings for most teachers as they are faced with either changing their behavior or ever having a comfortable voice while teaching.

Conflicted feelings about changing habits were apparent through small comments made during interviews where teachers often recognized that they should be making some change in their behavior but blamed themselves for an inability to do so. One example of this came from Michelle, who noted the large amounts of time and money required to seek help for her vocal issues. She simply stated, "It's so hard to find time and it's expensive." On top of teaching, Michelle is a mother of two and heavily involved in her children's athletics, leaving her with no room in her schedule to complete the long road to recovery. The time issue paired with the large price for treatment leaves many teachers feeling blameful that they cannot make that change.

Others, like Alex, had similar things to say, mentioning she was not currently completing any habits to help her voice, but that "I keep telling myself I need to get a hold of the guy that [a coworker] worked with, so that I can get this taken care of." Another presented issue regarding time and being able to complete the avenues available for voice strain recovery, Alex shows guilt for not using her free time to fix her voice issue; though as another mother of two very young children, it is difficult to find energy when many things are competing for her time between school and home.

Not everyone shows guilt and blame exclusively over large changes such as not finding the time to seek medical help. Some teachers show guilt in not completing habits as small as staying hydrated throughout the day, with many of the female teachers expressing a lack of time in their day to use the restroom if they did drink more water. Michelle and Jenny both made comments throughout their interviews mentioning a difficulty finding time to use the bathroom throughout their school day, especially with their schedule this year. Michelle said bathroom trips are hard because "inevitably when you go to the bathroom, that's when something happens." In similar agreement, Jenny described how her schedule this year required her to be in her classroom the entire afternoon with no teacher aids in her room, eliminating a chance to go to the bathroom during her school day. "Last year was a little bit better because we had the whole morning where we taught and then we had lunch and one period and then it was the end of the day. But today we have them from 11:15 until the very end of the day." Both instances display how teachers recognize actions they should take to protect their voice and how they blame themselves for not being able to complete them but failing to acknowledge the larger barriers preventing them from making these changes.

One of the largest causes of self-blame was inspired by outside blame being placed on teachers themselves. This was most astonishing for Jenny, who is only in her third year of teaching. Jenny reflected on her time as a student teacher for SUNY Cortland and experiencing immense vocal strain that resulted in her developing laryngitis and an inability to speak. She explained:

> When I got to the end of my first section, I didn't have any voice at all. And then I got to the end of my other section and actually got in trouble with my supervisor, because I didn't have a voice. And I got in trouble because I wasn't teaching [the students] and I'm like, 'I literally don't have a voice, how do you expect me to teach these lessons?' She made me feel like it was my fault because I didn't have a voice.

In this case, an issue that is widely experienced by the teacher population is framed as a personal issue stemming from an inadequacy to teach in Jenny, as seen by her student teaching advisor. The tone and treatment towards Jenny's inability to speak led Jenny to place the sole blame on herself.

Interestingly, the Coronavirus pandemic of 2020 also served as a variable that caused self-blame as many teachers did not recognize the amount of vocal strain they were

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experiencing until masking mandates were enacted, leaving them frustrated. Masks provided a further obstacle for teachers' voices to overcome in completing their job of conveying new information verbally to students. This often led teachers to despise masks, without realizing that the way teachers use their voice is the basal issue to the manifestation of vocal problems, which leads to more self-blame and doubt.

Alex, an elementary physical education teacher, pointed out masks as the variable she noticed that caused much more vocal strain. She went as far as to completely blame masks for her vocal strain, claiming "I think teaching with masks on, and trying to be loud enough to be heard. I strained my voice doing that…trying to teach with a mask on in such a huge space, and you couldn't, there was nothing you could do to be loud enough." Once we got farther into the interview and Alex was hearing more information about the manifestation of vocal strain symptoms, I was able to explain how masking could have been the one variable that pushed her voice over its limit into severe manifestations of vocal stress. Prior to that, she believed it was her inability to overcome speaking with masks on, which caused feelings of frustration, self-blame, and questioning.

Cathy, a chorus teacher whose entire ability to teach depends on her using her voice, said wearing masks and singing were a real challenge for her. "Masking was impossible, I had to start using a personal amplification device, because getting past the mask was and still being heard and being expected to model singing when I had that barrier in front of my face. The first time I ever felt like I had to use amplification for the sake of vocal hygiene." This is significant because Cathy already possessed some understanding of vocal strain from personal training for singing and she was feeling inadequate in her teaching even when she practiced multiple vocal hygiene techniques throughout her daily life.

Lowered Life Satisfaction

Overall, teachers depicted a lowered life satisfaction due to the manifestation of vocal problems from their occupation. Most teachers expressed they felt unable or discouraged from teaching at times, often leading to an altered lesson plan that involved fewer talking interactions with their students, which leads to teachers finding less enjoyment from their occupation. Furthermore, many teachers expressed a need to choose between aspects of their personal life that bring them enjoyment and having a voice the next day to continue their employment. The pattern of lowered life satisfaction is also attributed to the pattern of self-blame in teachers.

Many of the teachers interviewed introduced the idea of a student-led or silent class day, where students were given some form of schoolwork to keep them busy while the teacher could use the time to recover and rest their voice. Cathy described how this situation played out recently when she lost her voice due to strain and bronchitis while teaching chorus. She said "I taught one more day than I probably should have before I took off. And as soon as I did, it was like, Yep, it's going, kiss it goodbye. We had to do silent rehearsals for a couple days." Speaking more broadly, she also noted

"There have definitely been days where I'm like, yep, we are doing non-singing rehearsals specifically so I can rest [my voice] for a little while." Considering Cathy is a brand-new chorus teacher to her school district, she must do significantly more modeling for her students to build trust with them. She remarked "I'm probably doing more modeling now than I will a year from now. Just because they're still feeling 'Is it safe to sing in the room with this lady?' And I'll put you know, especially my seventh to eighth-grade boys who are likely to crack [their voice]." Since Cathy is trying to do significantly more modeling now as a new chorus teacher, not being able to because of a lack of voice interrupts her trust and connection with her students, leading to a lowered quality of teaching and life satisfaction.

Sixth-grade teacher Jenny had similar experiences within her classroom. Jenny described the use of silent reading time to keep kids engaged while resting her voice. She put it bluntly "There's been days where I'm like, 'You know what? My voice is shot. I guess I'm not teaching the lesson.' I end up just saying 'read a book, get away from me for 40 minutes,' so that I can be quiet." In Jenny's case, the discomfort caused by talking, quickly alters into frustration with herself and the students, causing her to remove herself from needing to vocally interact with students to rest her voice. With a disconnection from her students and feelings of frustration, Jenny feels exasperated to the point she sees no value in continuing to teach as she assigns her students independent reading time that doesn't include interaction with her. This culminates into a lowered life satisfaction as she becomes disconnected within her relationships with students and finds no joy in teaching due to her discomfort.

Michelle, a junior high physical education teacher, also described a discomfort while talking that often inhibited her ability to teach at her peak performance. She described some of the symptoms she gets from vocal strain, including an inability to project entire sentences while speaking, soreness in her lymph nodes under her jaw and within her neck, and a shortness of breath. She stated, "The amount of strain at just finishing a sentence, there's times where I'm, like, out of breath, just from talking because you're trying so hard to force your voice out." She remarked how "I get shorter breaths a lot,' indicating that this issue not only affects her ability to speak, but her wellness as she struggles to get enough air. Although Michelle is in extreme discomfort while trying to project while teaching, she often pushes through at the cost of her own well-being, which leads to a decrease in life and occupational satisfaction.

Many teachers also describe a pattern of occupational dysphonia following them home and invading their personal lives outside of the classroom. This often led to an interruption or discomfort while completing other aspects of their lives and lowering their overall quality of life. In the words of Kelly, "There's a constant of going home, your throat is tired, your throat is sore, and might be in and out losing your voice. I experienced just going home and being able to feel like I need to rest my voice rather than talk with my family about how their day went." In the case of Kelly, her occupational discomfort is following her home and inhibiting her from connecting with her loved ones as she finds herself needing to rest her voice while not at work. Since her

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vocal pain is something she cannot leave in the classroom, it becomes a hindrance to her family life.

Michelle also described a similar pattern of her vocal strain coming home with her, saying "if it's something where I've been yelling a lot then I definitely noticed later that night and my throat is really tired or really sore." Her discomfort also seeps into her daily life outside of school, constantly making it uncomfortable when she is home.

From this cycle of teachers' never-ending vocal discomfort, many teachers described a feeling of having to choose between continuing to pursue activities that give them enjoyment in their personal lives and having a voice when they return to the classroom. This pattern was highlighted in stories where teachers described some of their favorite extracurricular activities such as coaching, playing in a band, and even playing with one's children.

Abbey, a special education teacher, spent some of her years as a coach for many different sports including swimming and basketball. Having spent many years on the pool deck, she commented on her experience with trying to project her voice in practice. "It was like you had to convince yourself to talk loud, your voice was actually physically tired." Furthermore, she described a constant feeling of tension within her neck, upper back, and shoulders while coaching, saying "I was like, 'Guys, I feel like I'm walking around school like this all day' [shrugs and holds shoulders elevated], like tight, because I do just feel like I'm always cracking my neck and stretching because I feel tension." Abbey is describing the muscle tension that can occur when the vocal cords require the recruitment of other muscles within the upper back, neck, and shoulders to forcibly project the voice. The combination of both teaching and coaching leaves Abbey in constant discomfort, but the only option to alleviate stress is to quit coaching because teaching is her career. In this case, the occupational dysphonia on top of other vocal demands of coaching can lead Abbey to question her position as a coach, something that gives her great fulfillment.

David also had similar experiences concerning his involvement in a personal band that he has performed with for many years. As a vocalist, his voice is a key tool to both teaching and singing, and the shared use of his voice has presented him with many obstacles preventing him from enjoying "one of the most fun things that I get to do in my life, to go out and make music and sing." David described how after singing in long gigs all summer, it's always returning to school that destroys his voice. "I'll be singing for three hours, there's something about coming back here and talking and projecting for so many consecutive hours in the day, that it just puts that additional voice strain on." In his interview, David drew the connection between the beginning of the school year and the added vocal strain himself.

Having made that connection and wanting to feel better, David described his experience visiting an ear, nose, and throat (ENT) doctor about his voice. Upon leaving, he was presented with a long list of variables and habits that contribute to vocal inflammation and strain. This list included many aspects that made David feel he needed

to reevaluate his priorities and behaviors, saying "I really had to make choices in my life about what I value and what's important." Some may not think of it as large but cutting out alcohol in one's diet can improve voice quality, as it "can drain and dry out your vocal cords," David explained. Considering the nature of his side gig as a singer, alcohol was a major part of the experience in performing. David chortled "there was this other side, this other benefit to it, that you get paid in beer and food. So it was like, 'Oh, great!', I go out, I get to do this thing I like and I drink for free for the night." However, David had to make a choice between this part of his performing experience and salvaging his voice for teaching the day after a gig. Ultimately, David decided to cut alcohol out of his life, saying "I don't really even drink alcohol anymore. It's a rare time that I'm doing it. And if I am, I'm certainly not going to be speaking or singing a lot." Although it appears minor, David's movement away from consuming alcohol while performing in his band to preserve his voice is an example of how he must alter the activities that give his life a greater purpose.

One of the most eye-opening instances of choice within a teacher's life to preserve their voice came from Alex describing how mindful she must be while playing with her two young children. Alex recognizes in herself that she can be a loud speaker, mentioning how she constantly is "listening to my mom and dad complaining that I'm really loud when I speak." She further explained how she has been trying to be much more mindful about misusing her voice both in school and at home. At school she finds it easy to be mindful, as she can "just bring them [students] close versus trying to explain further out." But at home she finds herself slipping, talking very loud and deep, especially when playing with her children. She went on to describe one instance, saying "When I play with my kids, I'll try to like 'Mwahahaha', those dark or deep noises. One day, my voice wasn't that bad and I jumped out to scare my oldest. I mean, it was hilarious. But after that, I was like, 'Oh, that hurts.'" She went on further, mentioning "I try not to do those things anymore." Alex is then presented with the choice of playing with her children in a silly manner or harming her voice. In her case, Alex decided to push away from playing in this manner to preserve her voice, even though it brought joy to both her and her children. This contributes to a decrease in life quality.

Discussion

The findings of this research indicated that teachers fall into a pattern of self-blame, which works to create a larger cycle of lowered life satisfaction. The pattern of self-blame was highlighted by factors and behaviors including a lack of awareness concerning the overall affected population, needing to buy technological accommodations to adapt to their lack of voice, not using technologies provided by the school district to aid in teaching, and the misinterpretation of symptoms caused by vocal stress as being caused by faulty or unfavorable behaviors in their personal lives. Aside from choosing not to use certain technologies because it disrupts their style of teaching, most of these factors that perpetuate self-blame in educators stem from a lack of knowledge concerning vocal hygiene. Concerning self-blame that is generated by choosing not to

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use technology that helps project the voice, this shows how many schools are trying to utilize means of projecting that are impractical and inefficient to teaching. These further display how administrations are also lacking awareness and education on this niche issue, as teaching requires accommodations that go above and beyond just projecting the voice. An example of this is the speaker systems that distract children and disrupt learning because they do not provide a central focus point.

The overall pattern of lowered life satisfaction seemed to run parallel with the cycle of self-blame as many teachers described days of not being able or wanting to vocally teach and connect with their students. Furthermore, many teachers felt inadequate on days when they could not perform or connect with their families and friends after the school day concluded due to their vocal strain. This also stems from a lack of awareness, as many teachers don't realize it is their occupation that is disrupting their personal lives. But when teachers do make that connection, considering they already bring home an abundance of schoolwork that must be completed with extra time outside of school hours, such as grading, the additional stress of coping with a weak voice is enough to discourage teachers from enjoying their occupation. When these two cycles come together, it makes teaching incredibly exhausting as the stress and pain of the school day is never-ending, providing no joy, and cultivating frustration.

This research provided similar results to other research completed on occupational dysphonia in the past. The decrease in overall life satisfaction and quality has been documented multiple times in research, as Arújo et al. (2008), Birchall and Carding (2019), Grillo and Brosious (2008), and Meulenbroeka et al. (2010) all describe the same phenomenon. However, I found results of past research lacked a personal connection and visualization of how vastly this issue affects teachers' personal lives. Considering this research focused on the topic from an anthropological perspective, it focused less on the logistical causes and aspects of the issue and more on the effect it has on teacher's day-to-day life. Many other patterns were seen in both past research and this, including misinterpreting vocal issues as being caused by poor behavior, the work environment being a cause for why some teachers experience occupational dysphonia, and the many negative effects of occupational dysphonia in teachers including absenteeism, frustration, and dissatisfaction with their jobs and themselves.

Interestingly, my research included discussion on how there is a lack of available and practical accommodations teachers can use for projecting their voice. This was not something I had found while completing my literature review. This opens a dialogue on why some accommodations with the intention of fixing occupational dysphonia are ineffective, leading to the development of new education technologies adapted to specifically aid educators in projecting while teaching.

Conclusion

Occupational dysphonia perpetuates a cycle of self-blame in educators, which leads into a larger pattern of lowered overall life satisfaction and quality. Self-blame is per-

petuated by both external factors, such as judgment from authority figures like advisors, and internal factors, like needing to purchase technological accommodations to overcome a perceived inadequacy within educators themselves. However, the largest cause of self-blame seemed to be generated from a lack of awareness concerning vocal issues. Self-blame, paired with the many obstacles occupational dysphonia places between teachers and the activities they enjoy, lead to a lower quality of life as educators struggle with frustration revolving around their voice. This frustration leads to distal issues, including a lack of job satisfaction and a disconnection from students as a means of resting their voice, which creates a less interactive and effective learning environment.

These findings call for change to occur within teachers' preparatory education. Since the largest factor that perpetuates the development of vocal disorders is a lack of awareness of the issue, educating teachers and school administrations more on vocal hygiene and the vocal demand of teaching is a key first step to mitigating occupational dysphonia in educators. School districts should also create more dialogue within their staff concerning this issue, especially revolving around the shared cycle of immense vocal strain seen across most teachers. Future research can continue building on how occupational dysphonia affects college-level educators and include input from curriculum developers on ways vocal hygiene and awareness can be implemented into the preparatory education teachers complete before their student teaching and beginning their employment. Future research can also explore the development of new education technologies that effectively aid educators in projecting their voice while teaching.

Educators are one of the most overlooked factors in our daily lives as they act like a gate, protecting and allowing access to knowledge for children and adults alike. To continue to learn, we must begin to recognize and value a teacher's ability to speak comfortably and confidently. Otherwise, we may find ourselves in a state of immaturity, no longer able to grow to our full potential as our educators suffer in silence.

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An Interview with Steve Derné, Professor of Sociology of Wonder

Hailey Bernet

Did Kate's paper offer something you hadn't encountered until now? And what were some of the strengths of her paper?

Steve Derné: So the great thing about Kate's paper was of course that, well there's two great things. First of all, the studies of wonder tend to say that people don't have an intense experience of self, but she did have an intense experience of self during her wonder experience and seeing how she overcame some anxieties. And the second good thing about it is that people also talk about how there's a dark part of wonder too, that is when you look at life and death or you know, you come into contact with some existential realities. So in her case, she did get at that kind of dark wonder or anxiety but also how she experienced wonder being able to overcome anxieties as much more of a process. So wonder also had a negative emotion and you can see that in her great title "wonder Overcoming Anxiety, Feelings of Self-negative Emotion, and Encounters with the Ugly and wonder Experiences" so that's what was good.

What were some of the strengths that led you to nominate this paper?

Steve Derné: Well again, it was the complexity. So I often ask students to do research and, you know, we can't do extensive research with the students so we can only do kind of like intensive research, so there are some things we can learn from close study of particular cases. So, in this case, you know, it's just that recognition of complexity that things are not-- It's to recognize that things are not as simple as it seems. She recognized the complexity of the wonder experience I think the main thing, and also that she had good, descriptive stuff on everything that she did.

What should students expect to take away from this class? Assuming you're teaching it again?

Steve Derné: Well, so the truth is that this is a senior seminar class, and the first thing is you get real experience doing research and real experience doing discovery. They should just learn what the research process is about, but guess what? In reality in this class we got a sense of community that was just great and it was really a one of a kind thing, so I don't believe we're really, I don't know if I'm ever gonna get it again, you know, I can't. I'm not interested in teaching it again because this class just cannot be topped. I just think, you know, I'm always trying to put ourselves on a voyage of discovery so that we can discover some new things. This class had a super strong community so that turns out that was the big thing so the last day of class the final

exam was, we sat in a circle to say what the most important things we've learned are. It was just like a tremendous wonder experience, there's no way to describe it. It was a community experience. There was a student that came back for their last class, after all those years. She drove from Syracuse twice a week for the class, and she drove back for the GREAT day of the six students who presented, not her because she graduated, and one student did not [present]. So the main thing to get out of it was community it turns out. The big thing is presence.

How might your research fit into the grand scheme of sociological introspection?

Steve Derné: So turns out sociological introspection helps us get at the processes and helps us get complexities because a lot of what we do is we design studies to find out particular things, and so we tend to find out what it is we set to find out, and we often miss out on on a lot of complexities and processes and that sort of thing. So the great thing to do is just, first of all, to explore topics of the students so I learn something new. So I'm thinking I'm gonna do some stuff about non-ordinary experiences and stuff on the sociology of wonder. I think introspection is just great to give insight, I said to complexities and processes while the rest of sociology tends to just take all of that out of it. And there's like completely different methodologies to like when we do surveys, we like catching people in like some snapshot of a moment. Wouldn't it be more interesting to try and study decisive moments when people make some changes to how they think? So I'm done basically brainwashing people into existing socio-logical methods, and the great thing is that the students can do research that make real contributions, so that's what I find to be the most exciting part of it. The whole methodological focus it's just a problem you know? I'm happy to just keep learning this stuff, and once we get outside of the limitations of our methods, we can learn all kinds of things so that's the way I see it.

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An Interview with Kate O'Neil, Author of Wonder at Overcoming Anxiety

Hailey Bernet

What is this class based around and the general theme, and who is the Fuller mentioned throughout the paper?

Kate O'Neil: So the class centered around wonder and the professor, Professor Derné, assigned readings throughout and the papers that were assigned for each class, I think we had three of them we had to incorporate these readings into. So Fuller is one that he brought up. So his full name is Robert C Fuller and he is a professor of religious studies at Bradley University. He specializes in religion and psychology. But he actually wrote a book in 2006 called *Just Wonder*. And so I think that that was where Professor Derné got a lot of his, or was kind of focused on, was his aspect of wonder. The class professor Derné created was a small class, so there were eight of us and with that size of a class, the community that we built in the beginning of the semester was just great. He structured it so we all got into a circle every day and we talked about the readings. But it was more. So in a lot of classes when you're assigned reading, they're really academic and they're boring, you kind of don't have a great discussion around it. So he also incorporated, just like our thoughts of what wonder is and what our view was. But another thing I should mention too, at the beginning of the course. We had no idea what wonder was. We had expected him to say this is the definition we'll be working with and he didn't, he said. What is wonder to you? So that was kind of something that we were working on throughout the semester, defining wonder for ourselves. Which also added another aspect of community because we were figuring that out together.

Have you been able to apply anything that you've learned so far and has this experience as a whole changed your perspective?

Kate: Yes. The other papers in the class were a lot about nature as a source of wonder, or looking at wonder in the good parts of wonder. And although that's great, I focus my paper on the bad parts of wonder. So anxious, I talk about my struggle with picking my skin and I think that through writing this paper and then presenting it at GREAT Day, I was able to expand my definition of wonder to include the "bad parts of it." And in terms of how my perspective changed through the experience, it was just recognizing that if it's not a "good" experience, you can still transform it into one.

So before I had thought of my anxiety as kind of a detriment. It was this overwhelming sense and I was like, really being dragged down by it. But now with this wonder paper and through that class, I'm able to reframe and say, you know what, my anxiety, though sometimes is a burden, it does make me who I am and it does make me have the thoughts that I do. So I think just reframing the definitions of "bad and good" and like how we can work to make negative experiences shaped into positive.

What you have been able to take away from this wonder experience, which is kind of like the question I asked before, but also why should people pay attention to wonder.

Kate: So that's a question that my classmates and I were asking ourselves at the beginning of that course. It was called Sociology of Wonder. We were all sociology majors and it was a required capstone. So we took the class in hopes that it was just gonna be all good feelings of wonder. Like "woohoo!" and I can't speak for everyone else, but I definitely had the intention of going in just as any other class, and I'd forget most of it. But I think that wonder is important for people to pay attention to because it is not talked about. It's not. There's very little emphasis on wonder and the definition of wonder. And because I always thought that it had to be an aspect of, like, surprise or thought-provoking and it doesn't have to be. So I think overall people should pay attention to wonder because it expands your knowledge of how you feel. So providing or having wonder as an option just makes it easier to express yourself as a whole without wonder being an option. You're left without us, you're left without that ability to to explain yourself. I'm going with that wonder and then, umm, like the opposite of wonder. So like the bad parts of wonder, if I didn't know what wonder was and what the bad parts of wonder entail, I wouldn't know how to reframe my anxiety experiences. Or, you know, picking my nails or what have you. And I think that it's just so helpful to frame what you're going through, whereas using other emotions or feelings like happiness or sadness. Those are so used, like so overused and so generalizable. Whereas wonder, I think it's really amazing to be able to apply that to your own experiences.

How did you interact with other students in the classroom? Did you influence them or did they influence you?

Kate: Yeah. We definitely influenced each other. It was, again, community. It was. It was building this class that didn't feel like a class. We all looked forward to going because it was a break. We were talking about these big ideas, but we were in a space that was safe enough to do so without judgment. And again because there were only eight of us, It was really easy to form personal relationships with the eight of them and then Derné himself too. So they created this environment where I felt safe enough to explore these feelings with them. And then they were so receptive to that. Which I think not only helped me, but helped them too. The bond that we created, like all of the people, we're still in contact with Derné. He still emails us about different wonder experiences he's having and we'll respond with ours. This is going to sound terrible,

but I didn't really think that I was going to learn anything that I didn't already know, and now looking back, I've learned so much from that experience. I've gained friends, and a roommate. A best friend, and also in Derné, just a person to trust and to email funny pictures of chickens back and forth to as a source of wonder or talk about more serious things like anxiety or the problems in academia with stress. I learned to be more open with myself and my feelings and being understanding of myself because I was able to understand them.

Wonder at Overcoming Anxiety: Feelings of Self, Negative Emotions and Encounters With the Ugly in Wonder Experiences

Kate O'Neil

sponsored by Steve Derné, PhD

Abstract

Fuller (2012) defines wonder experiences from a positive perspective, with an added emphasis to the beauty of life, the unexpectedness of life, and the inexplicable nature of life itself. He distinguishes wonder from awe when he states: "wonder differs from awe, however, in that it isn't accompanied by fear or submission. Wonder diminishes the sense of self, yet does so without inducing interpersonal submissiveness" (p. 70). However, my experiences addressing anxiety experiences suggested to me how movement away from negative experiences can allow one to see the good from those 'bad' experiences, which in turn emits wonder. In order to explore this insight, I used sociological introspection. I contemplated the emotions and feelings I had when journaling about my negative anxiety experiences, and how those may be a source of wonder today. I journaled consistently for two weeks, and then continued to check in with my progress once every couple of weeks after the initial period. This was such a transformative process for me that I can hear the excitement in the words I shared. I experience wonder through the knowledge that I can make it out of some of the worst days I face, and because I know I have completely accepted myself for all I am.

Fuller (2012) describes wonder experiences from a positive perspective, one that emphasizes the beauty of life, the unexpectedness of life, and the inexplicable nature of life itself. However, based on my personal experience, I believe that the movement away from negative experiences allows one to see the good from those "bad" experiences, which in turn emits wonder. Fuller focuses on the positive experiences that are associated with wonder, but he should include some discussion on the complexity of negative emotions that could potentially turn into positive experiences. My experiences provide a different insight into Fuller's definitions of positive and negative emotions, the diminishment of the self through wonder, and his emphasis on the beauty of wonder.

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Fuller (2012) explains that wonder experiences are derived from positive emotions, rather than negative emotions. Fuller is offering the idea that wonder experiences are based on positive emotions, therefore negative emotions do not contribute to wonder experiences. In his discussion of wonder, Fuller does not only describe wonder, but he also distinguishes between positive and negative emotions. He defines negative emotions, like fear or anger, as emotions that are triggered when experiences don't meet one's expectations, thereby frustrating the individual. He defines positive emotions, like joy or wonder, as emotions that are triggered when experiences exceed expectations (Fuller, 2012). This is an important distinction to make because in defining the difference between negative and positive emotions, Fuller identifies wonder to strictly be a positive experience.

Fuller proposes that wonder experiences are derived from positive emotions, though he also mentions how wonder diminishes one's sense of self. Fuller (2012) states, "wonder differs from awe, however, in that it isn't accompanied by fear or submission. Wonder diminishes the sense of self, yet does so without inducing interpersonal submissiveness" (Fuller, 2012). This point is important because it explains another difference between wonder and other emotional experiences. Wonder experiences are larger than the self, but do not require one's sense of self to be submissive, unlike fear, which is why it is so inexplicable. Fuller supports this thought by stating, "yet wonder differs from other startle-induced emotions in terms of its specific motivational effect on perception, cognition and behavior" (Fuller, 2012). He includes this with the intent that wonder experiences alter one's perception, cognition, and behavior, thus diminishing their sense of self. Wonder experiences change the way an individual thinks and behaves, which alters their overall sense of identity.

Fuller's focus on the distinction between positive and negative emotions complements his argument that wonder experiences contain beauty. Fuller (2012) attempts to explain wonder by suggesting that wonder experiences "make possible the quiet contemplation of a grander scheme of life that strikes us as responsible for life's beauty, order, and vitality" (Fuller, 2012). Fuller proposes that wonder is responsible for life's beauty, order, and vitality, and our experiences with wonder open our lives up to these characteristics. Wonder experiences allow us to see the beauty of everything, which allows us to look for beauty in our lives. According to Fuller, wonder prompts a spiritual stance which makes us want to connect to the source of beauty and truth (Fuller, 2012). Throughout the discussion of beauty, Fuller describes the relationship between beauty and truth, which allows wonder experiences to be enjoyable. Although wonder experiences are positive, they can be derived from negative experiences, as well.

In order to explore how negative anxiety experiences could be a source of wonder today, I used the method of sociological introspection. I contemplated the emotions and feelings I had when journaling about my anxiety experiences. I journaled consistently for two weeks and then continued to check in with my progress once every couple of weeks after the initial period. I analyzed these journal entries, reflecting on the emotional experiences I was going through during this time. These journal entries

will be used and analyzed in this paper. In my journal entries, I was focused on my anxiety being presented in two ways: picking the skin around my nails, and picking at my scalp. By considering specific implications of my own anxiety, it allowed me to pay close attention to the negative physical effects anxiety was having on my body. By first allowing myself to free-write, I can let all of my initial thoughts and feelings be heard without judgment.

Although Fuller (2012) is right, that wonder is typically found in beautiful experiences, I think that going through something that is bad, but powering through that experience to have it result in a good outcome can also be a source of wonder. Initially, I started journaling about my anxiety experiences because I have had a lot of self-esteem issues due to the picked skin around my nails and my bloody scalp. I was worried about how other people might perceive me based on my picked skin, which were often covered in blood. When I feel anxious, I feel out of control. I start to spiral, hyperventilating so it feels as if I am suffocating myself. My throat starts to tighten, my breathing begins to waver, I suddenly feel faint and lightheaded, all because of a test, an assignment due in a week, or even something as little as the socks on my feet. This is why having such debilitating anxiety, while maintaining a highly functional life, is so aggravating. I internalize all of the anxious thoughts I have, until they start to tumble out of my head uncontrollably, like a ball rolling downhill, all while everyone believes I have everything together. I started picking at the skin around my nails and at my scalp in order to feel in control over a situation where I felt out of control. Oftentimes, I don't realize I am picking until after my anxiety has subsided. This topic is one that is still sensitive to me, even though I have discussed it many times. In one of my first entries, I note: "I started picking my pinky finger because I was anxious and was not able to take my hands away from myself quick enough." Feeling like I have to take my hands away from myself makes me feel out of control and weak. The overwhelming temptation to pick, even when I know it is not a healthy way to relieve stress, can be unbearable at times. Journaling was especially difficult for me on days where I took a step backward: "During this process, I really regret the picking that I have done because my scalp hurts most of the time, and it is hard to resist the urge of itching." I was met with regret and disappointment when I would pick the skin around my nails or scalp knowing that I was keeping track of my progress.

Although the experience of journaling was defeating at times, I am able to see the good that came out of it, as well. Towards the end of the two weeks, I felt more confident in myself and the power I had over my picking. I mentioned,

> Overall, I would say that doing this 'experiment' I learned that breaking a habit takes time, and to not beat myself up over the setbacks that I faced. I understand that in some circumstances, I am going to be stressed and anxious, and I have to learn a new behavior that helps me with that other than skin picking.

By the end of the two weeks, I was grateful that I had maintained my journaling practices, as having that expectation that I would be journaling my progress daily allowed me to be more aware of the harmful actions I was committing. By rereading my journal entries and analyzing them, I was moved to tears when I read my final sentences:

> I was able to get my nails done over the weekend! This is something that is very meaningful and exciting to me because I only get my nails done when I don't have any spots where I picked at my nails. Which means I have no picks started and all of my skin around my nails has healed!

This was such a transformative process for me, and I can hear the excitement in the words I shared. To me, this proves that although I view my anxiety experiences as something that is negative, I am also able to experience wonder through the positive outcomes that I associate with them. Fuller (2012) suggests that wonder experiences are always beautiful and unexpected, but by analyzing my negative anxiety experiences, I can see how something difficult can also emit wonder. Wonder is more than a beautiful, breathtaking experience. I experience wonder through the knowledge that I can make it out of some of the worst days I face, and because I know I have completely accepted myself for all I am, bloody fingers and scalp included.

These findings are generalizable to the public due to the experiences that I described are relatable. Although many people may not pick at the skin around their fingers, most, if not all people experience anxiety at some point. I think that this topic can be generalized to the public because it shows that anxiety experiences can also be transformed into wonder experiences. Wonder experiences are normally described as something beautiful, out-of-body experiences that bring a sense of joy but through my experiences, I think that wonder experiences can also be derived from the "bad." Believing that my anxiety experiences bring me wonder helps me to view my anxiety not as something that is negative and scary, but something that proves my strength and power. This sociological introspection can be improved by using documentary evidence to see if others have similar experiences as myself. I would look up people's experiences of having anxiety, and how they view overcoming that anxious behavior, and see if they experience wonder coming out of the "bad" situation. I would use Fuller's (2012) definition of wonder for this exercise, something that is joyful and beautiful because that is how I see the wonder experiences described above.

Fuller (2012) rightly describes wonder as a beautiful, transformative, unexpected, and inexplicable experience. He views wonder from a positive perspective, focusing only on the positive emotions that are typically associated with wonder experiences. I, however, add to his definition of wonder by proposing, and demonstrating, how wonder experiences can be derived from negative emotions. By viewing my anxiety with the same positive perspective as Fuller views wonder, I am able to experience wonder extensively.

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Punk and Perestroika: Voicing Resistance at the End of the USSR

Nathan Klaits

sponsored by Jovana Babović, PhD

Abstract

This paper focuses on Siberian punk band, Grazhdanskaya Oborona (GrOb). Founded in 1984, the band broke up in 1990 due to growing mainstream appeal and the end of totalitarian Soviet discourse. The liberal atmosphere of the Soviet Union during perestroika undercut GrOb's ability to voice criticism. Commercialization as well as a broadening audience also diluted the band's message and eventually caused it to break up. Referring to fanzines, interviews, and scholarly research, the paper presents the struggle of GrOb, as well as the Siberian punk scene more broadly, to voice criticism as rock commercialized and the authoritarian discourse of the mid 1980s broke down.

Introduction

Grazhdanskaya Oborona, translating to "Civil Defense," was one of the pioneers of Soviet punk rock. Led by its fiery frontman, Egor Letov, Grazhdanskaya Oborona—often abbreviated to GrOb—attracted fans with its poetic lyrics and powerful vocals. GrOb stood out in Soviet rock in that its members were from the working-class Siberian city of Omsk, while the other big names of Soviet rock like Kino, Aquarium, and Zvuki Mu were based out of the cosmopolitan cities of Moscow and Leningrad. During its thirty-four-year history, the band straddled several key eras of Soviet and Russian history. GrOb was founded in 1984 during the period of "developed socialism" in the USSR. This era was defined by the stagnation of many sectors of Soviet life, including the government and economy. In 1986, *perestroika* [restructuring] began, bringing rapid social, political, and cultural change to the country. Due to this sudden shift, by the late-1980s GrOb was operating in a dramatically different sociocultural environment. The challenge of remaining not only relevant but subversive—the principle GrOb had been founded on—proved to be the band's undoing. In 1990, at the height of its popularity, Grazhdanksaya Oborona broke up.

At the beginning of GrOb's history in the mid-1980s, the band was under intense scrutiny from the state. Its songs contained overtly anti-Soviet lyrics and they embraced the term "punk"—a genre Soviet censors deemed decadent and Western. All this made the band a target of surveillance and interference from the KGB (Yurchak, 2006; Kozlov, 2014). GrOb's music was recorded in band members' apartments and distributed through underground channels. They often performed in basements or university classrooms. Their music was loud, thrashing, and not particularly sophisticated. Importantly, though, this was exactly how Egor Letov, their frontman, liked it. He insisted the true content of his music was in the lyrics, not the sound. His goal was to communicate the experience of living in a totalitarian state, and to challenge that state in the process (Pobokov, 1990; translated from the original Russian with Google Translate). Alongside GrOb, an entire Siberian punk movement exploded in the mid-1980s. Its members were students, the unemployed, or simply young people with nothing better to do. Siberian punk sought to give voice to the frustration many young people felt living in the final years of the Soviet Union. The state stifled their voices, and punk was a way of not only channeling their frustration but challenging the state as well. Later, the meaning and efficacy of this challenge would be thrown into doubt as the restrictive, state-controlled world of "developed socialism" ended, and perestroika began. By 1991, GrOb and most of the other Siberian punk bands had disbanded, at a time when it seemed that the genre was on the cutting edge of Soviet rock. In this paper, I will demonstrate how the liberalization and marketization of the USSR led to the undoing of Siberian punk. In examining the abrupt end of GrOb and Siberian punk, we gain an understanding of how subcultures struggle when the conditions in which they arise are altered, and more broadly, the limits of music's ability to shape society.

Perestroika Punk

At the beginning of 1988, Siberian punk was thriving. Aside from GrOb, bands like Putti, Instruktsiya po Vyzhivaniyu, Kulturnaya Revolutsiya, and many others had formed over the past few years. Rock clubs were opening in far-flung cities like Novosibirsk, and the scene was even garnering attention from the established rock institutions in Moscow and Leningrad (Meynert, 1987; Pobokov, 1990; translated from the original Russian with Google Translate). It seemed the future was bright for Siberian punk, but by 1991 the scene had disappeared. Bands were breaking up, one of the scene's most promising musicians, Yanka Dyagileva, had passed away, and GrOb, once the most prolific group in Siberian punk, had disbanded.

It is no coincidence that Siberian punk's sudden decline coincided with the collapse of the USSR. The liberal atmosphere of the Soviet Union's final years propelled Siberian punk to greater popularity, but also required it to become a marketable commodity. The system that had forced Letov and other musicians into the shadows now sought to profit off their success. While in 1985, the KGB had forced Letov into a mental institution, by 1988 GrOb was performing at festivals organized by Komsomol, the Communist Party's youth wing (Banev, 1989). The years 1988–1990 also represented

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the peak of GrOb's creative output. Letov produced several albums a year during that period and performed at festivals from Novosibirsk to Tallinn. Yet despite a sudden burst in popularity, the content of GrOb's music—the message that Letov insisted was the whole point of rock—didn't appeal to a new cohort of fans. During the late 1980s the members of GrOb often complained of hooliganism at their concerts and their new fans' indifference towards the band's lyrics (Herbert, 1990). The openness of perestroika propelled GrOb to new fame, but perestroika's capitalist reforms commodified it as well. Due to the changing social and political climate, Grazhdanskaya Oborona broke up in 1990 (Herbert, 2019).

At the beginning of 1988, it wasn't clear the repression that had characterized GrOb's early years would end as a result of perestroika. Just a few months earlier in April 1987 at a rock festival in Novosibirsk, Letov had performed in a band named "Adolf Hitler," and a warrant was issued for his arrest. Letov later remarked that this had been a way to thumb his nose at the state-run newspapers in Omsk that had "slung mud" at GrOb and labeled them fascist (Pobokov, 1990; translated from the original Russian with Google Translate). Unsurprisingly, "Adolf Hitler's" performance was poorly received by authorities. Letov always sought to push the boundaries of acceptability in the USSR, and as a result Letov along with his partner and bandmate, Yanka Dyagileva were forced on the run. For the next several months the pair traveled the country performing in basements and crashing on couches (Pobokov, 1990; translated from the original Russian with Google Translate). This episode reflects the uneasy relationship between authorities and punk during the early days of perestroika. The fact that Komsomol organized a punk festival at all shows a certain willingness on the part of authorities to tolerate punk. Still, party officials weren't ready to relinquish all their methods of discursive control. There were still lines, and in 1987, Letov crossed them.

Undeterred by this brush with the law, Letov recorded three albums in 1988: *Tak Zakalyalas Ctal* [So the Steel is Tempered], *Vsyo Idyot po Planu* [Everything Is Going to Plan], and *Boevoi Stimul* [Battle Incentive] (Grazhdanskaya Oborona [GrOb], 1988; translated from the original Russian with Google Translate). The records represented GrOb's continuing evolution. Sonically, the melodies on the tracks were more developed, there was less distortion than in earlier projects, and the production quality was noticeably improved. Letov's lyrics retained their vivid imagery and anti-Soviet messaging, but they more explicitly referenced political figures and movements. On "Iuda Budet v Rayu" [Judas will be in Heaven] and "Anarkhiya" [Anarchy], Letov referred to the famous anarchist leader Nestor Makhno and claimed anarchy to be his cause (GrOb, 1989a; GrOb, 1988b; translated from the original Russian with Google Translate). The title track of *Vsyo Idyot po Planu*—one of GrOb's most famous songs—referred directly to Lenin, perestroika, and Kim Il-Sung. In the song, Letov sang with his characteristic sarcasm of the failures of perestroika and the Soviet project generally: "When communism comes everything will be fucked up/It's coming soon, you only have to wait/Everything will be free there, everything will be bliss/Maybe you won't even have to die there" (GrOb, 1988c). GrOb had always been political,

but starting in 1988 and continuing through 1990, their anti-Soviet politics became more explicit than ever.

At the same time as GrOb was growing in popularity in 1987 and 1988, the Siberian punk scene as a whole was enjoying greater attention as well. Musicians began playing larger venues, and in the summer of 1988, Siberian punk organized one of its first large events, the Festival of Alternative and Left Radical Music, in the city of Tyumen (Banev, 1989). All the big names in Siberian punk performed, including GrOb. The musicians remembered the event as a success, despite the presence of KGB and Komsomol officials. One performer, Yevgeny Kuznetsov, noted that the authorities in the city of Sverdlovsk had been much more lenient than the ones at the Tyumen festival (Herbert, 2019). Examples like this suggest an uneasy relationship between Siberian punk and the state in the late 1980s. It seems that communist officials themselves weren't sure where the lines stood any longer, so that it was possible for punks to perform comfortably in one city and not another. The fanzine *Tusovka* [Party] published a dispatch from the festival, painting a picture of a haphazard event organized by both Siberian punks and Komsomol members (Banev, 1989; translated from the original Russian with Google Translate). The report also records a moment where a Moscow-based band offered to perform for 200 rubles. The organizers refused, insisting on keeping their event "non-commercial" (Banev, 1989; translated from the original Russian with Google Translate). Siberian punks were committed to offering an open platform for speech, and they seemed to have understood that commercialism threatened their ability to do so. Over the following few years, the growing Soviet music industry would become an existential threat for the Siberian punk movement and everything it stood for.

The Tyumen festival encapsulated Siberian punk's identity. It was haphazard, open, and interested largely in the content of its music rather than making a profit. The scene had thrived in the restrictive world of the pre-perestroika USSR, but it faced a forced reinvention in the Soviet Union's shifting political landscape. In the late 1980s, censorship was ending and the economy was liberalizing, meaning that bands like GrOb had the opportunity to market themselves and leave the underground world of basement venues and do-it-yourself recording.

Siberian Punk & Soviet Rock

Rock music was popular in the USSR beginning in at least the 1970s, and in the early 1980s the Soviet rock scene gained acceptance from state organs. By 1983, nearly every Komsomol newspaper had a column on rock music, informing fans about popular bands and upcoming events (Troitsky, 1987). In 1989, GrOb's music was circulating widely throughout the USSR and was even drawing attention from punk circles in Europe (Pobokov, 1990; translated from the original Russian with Google Translate). The established Soviet rock scene based in the big cities of Moscow and Leningrad, took notice of the band, and in 1989, GrOb agreed to join the Leningrad Rock Club, signaling the band's arrival into the mainstream of Soviet rock (Herbert, 2019). The

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Leningrad Rock Club was a state-sanctioned venue, one of many ways in which censors exercised some degree of control over a music genre they distrusted. By joining the club, GrOb was entering a far more established environment than the basement venues of Omsk and Novosibirsk.

Letov chose to relocate the band to Leningrad partly because of the perceived commercialism of the studio they were working with in Novosibirsk as well as the reputation of Leningrad-based music producer Sergey Firsov (Pobokov, 1990; translated from the original Russian with Google Translate). Firsov was known for increasing the reach of independent bands like GrOb, and for working with bands that had what Letov saw as "non-commercial potential" (Pobokov, 1990; translated from the original Russian with Google Translate). Ironically, it seems that by moving GrOb to the big city, Letov thought he was returning the band to its roots. However, Letov quickly came to see a gulf between the Siberian and Leningrad scenes. He told an interviewer in 1990 that he didn't think anyone in Leningrad was making particularly good music, and that 80 percent of the club's members had little interest in GrOb's approach (Pobokov, 1990; translated from the original Russian with Google Translate).

Letov wanted to bring his music to a larger audience, but also appreciated that some of GrOb's appeal came from the fact it was underground and that its music was rough around the edges. When it came time to record new music in 1989, Letov left the professional recording studios of Leningrad and returned to Omsk. Looking back on the decision, Letov commented: "I realized that with good recording quality, something very important is lost from what we put in… Now four albums have been recorded at my house. Very dirty, tough and lively. I think that's how it should be" (Pobokov, 1990; translated from the original Russian with Google Translate). Letov understood much of GrOb's appeal came from the fact that it had no connections to established institutions. The music literally came from his living room. In an environment where professionally released music was carefully vetted by state censors, GrOb's authenticity held great appeal for fans. At the same time, Letov wanted his music and messaging to be accessible to as many people as possible. These contradicting demands resulted in a crisis for GrOb. In the end, the band was never able to find a way to be both accessible to a wide audience and authentic to itself. While Letov disliked the commercial direction GrOb was headed in, he never found a way to return the band to its roots.

The music that resulted from GrOb's return to Omsk in 1989 is often thought of as its best. The band was facing a crisis in terms of its direction, but it clearly had plenty of creative potential left to tap. *Russkoe Pole Eksperimentov* [Russian Field of Experiments] in particular is celebrated as one of the best albums in GrOb's quarter-century long discography (GrOb, 1989a; translated from the original Russian with Google Translate). The album's final track was also its title track—a fourteen minute epic that referenced the Bible, Russian literature and proverbs, all while touching on themes of ecological destruction and suicide (GrOb, 1989a; translated from the original Russian with Google Translate). Sonically, the band reached new heights with the album. Letov's voice, the thrashing guitar, and pounding drums and bass all hit a perfect bal-

ance. Another 1989 album, *Zdorovo i Vechno* [Great and Eternal], hit similar highs. On one of the most famous tracks, "Moya Oborona" [My Defense], Letov portrayed the world around him as plastic and lifeless. Letov's "defense" in the song was his music, which he called "reflections of light on a glass eye" (GrOb, 1989c; translated from the original Russian with Google Translate). As enduring as these songs have become, the lyrics suggest a frustration with GrOb's inability to affect society as Letov would have liked. The "defense" Letov sings about is nothing more than a small piece of authenticity in an otherwise "plastic world."

At the time of these albums' composition GrOb was experiencing a meteoric rise in popularity while facing far less persecution than during its early days. Despite that, the music of 1989 was some of GrOb's most pessimistic. Perestroika didn't offer promise to Letov, only hypocrisy. It seemed the more idealistic Mikhail Gorbachev's aspirations became, the more Letov insisted on the impossibility of those dreams. On tracks like "Moya Oborona," Letov also doubted whether his own music could make an impact. In an October 1989 interview, he declared that rock's evolution in the USSR was over, and that it'd devolved into pop music (RIO, 1989; translated from the original Russian with Google Translate). In February 1990 at a memorial concert, Letov attacked critic Artemy Troitsky by name on stage for turning rock "into a bunch of shit" (RIO, 1989; translated from the original Russian with Google Translate). This episode reflects Letov's personal frustrations more so than any failing on the part of Troitsky. The trends in Soviet rock, and society more broadly, couldn't be changed by any single individual. Rock music in the Soviet Union was quickly becoming a business, try as Letov might to prevent it.

While writing on GrOb's history in 1995, Letov came to see the irony in this period of the band's history. From an outside perspective GrOb had achieved all it could ask for by 1990. It was well-connected within Soviet rock, popular across the whole USSR, and no longer operating under the threat of imprisonment. Yet at the same time Letov was unsatisfied. In a way, it was persecution he'd sought all along. He wrote:

> The fact is that I have always had a desire to bring the situation to the limit, to the moment when you are threatened with death. To ensure that reality itself…took active steps to destroy you. For only in this state can you check whether you really are worth something. (Letov, 1995; translated from the original Russian with Google Translate)

GrOb's initial project had been to push the authoritarian boundaries of the pre-perestroika Soviet Union, not to liberalize the economy and not to achieve democracy. The creep of capitalism into society at large, let alone the rock world, was never what GrOb was after (Letov, 1995; translated from the original Russian with Google Translate).

To compound GrOb's difficulties, the audiences that thronged to the band's concerts in the big cities of Moscow and Leningrad valued them for their energetic performance on stage rather than the content of their lyrics. One music critic wrote that at GrOb's

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first concert in Moscow it had been difficult to make out the words being sung but that the band had a "powerful energy" the audience was receptive to (Herbert, 2019, p. 60). Oleg Sudakov, a member of GrOb, said that under these circumstances performers had to embrace their roles as entertainers or else give up performing entirely (Herbert, 2019). Letov chose the latter option. On April 13, 1990, Grazhdanskaya Oborona concluded a concert in Tallinn, Estonia with a raucous rendition of "Vsyo Idyot Po Planu." Afterwards, Letov returned to Omsk, leaving rock and the audience he'd built behind (GrOb, 1996; translated from the original Russian with Google Translate). For the next few years he worked on an avant-garde project, Kommunizm [Communism] and a side project called Egor i Opadevenshie [Egor and the Pissed Off]. The music was made and released with little fanfare. Letov told Oleg Tarasov, the owner of a record company, to tell anyone who asked about him in Moscow and Leningrad that he was dead (Kozlov, 2014).

Other Siberian punks found themselves just as frustrated as Letov was. Many prided themselves on the scene's intellectualism. Roman Neumoev of the band Instruktsiya po Vyzhivaniyu noted that Siberian punks didn't wear riveted jackets or mohawks in the hopes that audiences would focus on the content of the performance rather than the appearance of it—yet more and more it was the aesthetic that audiences came to see, and bands felt unappreciated (Kozlov, 2014). Other bands chafed at the growing commercialism in rock. Artists were offered money by Komsomol officials to perform in various cities, but for musicians like Artur Strukov of the punk band Kulturnaya Revolutsiya, performing intensely personal songs up to three times a day was unthinkable (Kozlov, 2014). Soviet rock required entertainers, and Siberian punks refused to fill that role. In response to the demands many bands either went on hiatus or broke up entirely.

Conclusion

Although the Siberian punk scene was gone in many respects by 1990, its symbolic death didn't come until May 1991 with the suicide of Yanka Dyagileva. Dyagileva had dated Egor Letov and performed in Grazhdanskaya Oborona for a time, but she was also an accomplished artist in her own right. She had a powerful voice and stage presence, and she was especially renowned for the poeticism of her lyrics. Several famous Soviet rock musicians died at a young age, including solo artist Aleksander Bashlachev and Kino frontman Viktor Tsoi. Taken together, the premature loss of so many bright artists casts this era in a tragic light. Coupled with the rapid commercialization and sterilization of the music industry, the deaths of these musicians is closely associated with the end of this rebellious, subversive era of music. In the case of Siberian punk, the loss of such a vibrant and talented artist in Yanka Dyagileva came to symbolize the nail in Siberian punk's coffin (O'Cyc, 1989; translated from the original Russian with Google Translate).

The transformation of Soviet rock during perestroika and the subsequent collapse of Siberian punk challenges a straightforward understanding of the last years of the

USSR. The perestroika reforms were a welcome change for many aspects of Soviet society, but it also endangered the subcultures that had grown and thrived in the old totalitarian system. Although the state repressed Siberian punk before perestroika, the limits it enforced allowed the scene to cultivate a dedicated audience that appreciated artists on their own terms. Commercialization and the end of censorship broke that tight-knit community apart. In studying the collapse of the Soviet Union, a time of sudden openness and opportunity, one should acknowledge the subcultures and movements that were left behind, as well as the ones that blossomed.

Letov devoted years of his life, and at times risked his safety, bringing GrOb's songs to the world. All this was done in the hopes that the "idea" of his music would reach people and change the Soviet Union for the better. While the USSR underwent radical change during this era, it wasn't because of GrOb. In fact, the more popular GrOb and other Siberian punk bands became, the less they believed they were making a difference. Letov and his fellow punks were swept away by the tides of history, unable to change the direction in which it flowed. Undoubtedly, music can be transformative on a personal level, but at least in the case of Siberian punk, it was unable to be transformative on a societal level.

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Gertrude Blanch's Human Computers

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sponsored by Jeff Johannes, PhD

Abstract

Do you ever feel there is a lack of recognition of women mathematicians? In this paper, we will be diving into Gertrude Blanch's contribution to the world of mathematics. She has strong connections in business and mathematics. She is known for being a leader of the Mathematical Tables Project (computing organization) and pioneered algorithm designs for humans and mechanical computers. Reading this paper will give you information about Blanch's designs and explanations of where she came up with the ideas and how they affected the future of mathematics.

Gertrude Blanch was a profound mathematician who made groundbreaking contributions to computer sciences and became an emerging woman leader when society was strictly male-dominated for positions of power. Allowing women admission to college and offering women professions with authority was rare in the early 1900s. Throughout the Great Depression, women scholars struggled to find professions that would use their degrees. Blanch overcame many obstacles in her lifetime involving poverty, war, and economic depression. She made impacts on the fields of algebraic geometry, differential equations, and natural logarithms, and was a leader in the Mathematical Tables Project. Gertrude Blanch is one of the last and most important leaders in human computers and can be considered one of the first numerical analysts for electronic computers (Grier, 1997). Unfortunately, her work is not known by many, but it continues to be studied by computer scientists and mathematicians today and paved the way for transitioning from hand calculations to computing machines.

Gertrude Blanch was born in Kolno, Poland in 1897. Her born name was Gittel Kaimowitz. Her entire family emigrated to the United States in 1907 and moved to Brooklyn, New York (Suzuki, 2009). Blanch attended schools in New York, where her father encouraged her to pursue an education in mathematics. Her teachers noticed her excellent abilities. When she was in elementary school, she claimed that she was going to be a mathematician. This seemed to be an unrealistic statement at the time because there were limited roles in this profession for women. Few schools encouraged women to study mathematics. Society wanted women to be able to use their

knowledge and talents without disrupting the male dominance of professions and power. In the United States, there were at least a hundred female mathematicians who were demoted to limited roles (Grier, 2005). Blanch's father passed away in 1914, pressuring her to obtain a job where she could support her family. Blanch paused her education and became an office worker in Manhattan for 14 years, preparing Blanch for her role in the Mathematical Tables Project (Grier, 1997). During this time, U.S. businesses were rapidly expanding and testing new methods of organization, and by 1914, computation was emerging as a key business tool. Blanch's work in the business world gave her insight into the ideas of Fredrick Winslow Taylor, who started the first time-and-motion studies of industrial workers to advance labor efficiency. Taylor's work was incorporated into many of Blanch's key ideas with her future contributions to the Mathematical Tables Project (Suzuki, 2009).

Blanch's first clerical job was at Jacob Marks and Company. Here, Blanch did calculations including accounting, inventory, and planning, until she became manager (Grier, 1997). During her time as a manager, she set aside money hoping to still reach her goal as a mathematician. When her mother passed away in 1926, this gave Blanch the freedom to finally begin her professional studies as a mathematician. She began taking night classes at NYU, and after graduating, she left her clerk job to look for graduate schools. Many graduate schools did not offer women a place or scholarships. Blanch decided to attend Cornell University (Grier, 2005). She felt comfortable at Cornell, seeing few limitations of being a woman in mathematics. Blanch graduated during the greatest depth of the Great Depression when there were few jobs for mathematicians and fewer for women. This was when Blanch changed her name to sound more American, taking her mother's last name.

Blanch applied for another clerk job, answering an ad in the *New York Times* (Grier, 2005). While working as a manager of Barker Devin Company, Blanch enrolled herself in a relativity class with Arnold Lowan at Brooklyn College. Attending a few lectures but still managing professional homework responses caught Lowan's attention. Lowan was delighted to hear about Blanch's doctorate in mathematics and asked her to join his project, the Mathematical Tables Project, which was created in 1938 (Grier, 1997). Blanch would be a part of the project from the start until 1942. Blanch became the technical director and chaired the Planning Committee. Having a business and mathematical background allowed Blanch to excel in this position. The project started as a part of the Works Progress Administration (WPA), which funded the project to help support the crisis of unemployment (Formal, 2021). The project gave 150 unskilled workers a new profession of manual computing, using only paper and pencils. Blanch divided the computing floor into four different groups, one for each arithmetic operation. The Planning Committee would first translate the mathematical expressions used for the computations and a starting value for the table, using the Taylor series, continued fraction, or other kinds of expansion onto worksheets for the manual computing group. Then, using the algebraic properties of the function being arranged, the committee would find a method of computing values between the starting values (Grier, 1997). The Planning Committee would then break the computa-

tions into smaller units that would only use addition (group 1), subtraction (group 2), multiplication (group 3), and long division (group 4), with the computing unit only performing one of these operations. The first volume table of the exponential function to 15 decimal places was published in 1939.

The project's computation of the values of exponential functions was used to give the values to the correct rounding last decimal. The first computation was based on the value of e^x and e^{-x} for a number of key arguments. These are the values of the exponentials for key arguments with the equations:

$$x = 0.0001 \text{ to } 0.0009 \text{ at intervals of } 0.0001$$

$$x = 0.001 \text{ to } 0.009 \text{ at intervals of } 0.001$$

$$x = 0.01 \text{ to } 0.09 \text{ at intervals of } 0.01.$$

These values were computed by direct substitution in the exponential series expansions recomputed by the Project after being first computed by Van Orstrand (Roegel, 2017). The values of the exponentials for $x = 0.01$ to 0.99 and $x = 0.0001$ to 0.0099 were computed to 25 decimal places by multiplying each e^x by $e^{0.01}$ and by $e^{-0.01}$, obtaining $e^{x+0.01}$ and $e^{x-0.01}$. With these values, the process can be repeated to get the values of $e^{0.02}$, $e^{0.03}$, etc, checking the earlier values.

The human computers would test the accuracy of these values using three different tests. The first, the curvature test, involved taking derivatives of a function with the values of the exponentials and testing the results with various ranges and values of h. The computed values were tested using this equation:

$$R = e^{x+h} + e^{x-h} - 2e^x - 10^{-8}e^x - \frac{10^{-16}e^x}{12}$$

The curvature test tested every even argument once and every odd argument twice. A geometric test was used to compare the sums with their pre-computed values. This involved summing entries in groups and comparing the sums with precomputed values. Finally, a fourth difference test was applied. Expanding the Taylor series first, then expanding h^4, then expanding $(1 + \frac{h}{2})^4$ with $o(h)$ being other terms of higher order:

$$S = e^x(e^h - 1)^4 = e^x(h + \frac{h^2}{2} + \ldots)^4 = h^4 e^x(1 + \frac{h}{2} + \ldots)^4 \approx h^4 e^x(1 + 2h + o(h))$$

The fourth difference test checked that $S - h^4 e^x$ was not greater than $2h^5 e^x$. This test involved testing values of consecutive groups of five entries. These tests ensured that the volume was free from errors (Roegel, 2017). The computations and tests were performed by human computers and checked by Blanch herself.

During the next eight years, the Mathematical Tables Project would complete a range of tables. These included the "Table of First Ten Powers of the Integers from 1 to 1000" (1939), "Tables of Exponential Function" (1939), "Table of Natural Logarithms" (1941) (4 volumes), and "Miscellaneous Physical Tables" (1941). The project

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gained recognition and skill and started to do computations for specific projects. The Mathematical Tables Project was also in great demand during World War II. The Army was in need of map grid calculations and the Navy needed navigation tables for the new LORAN radio navigation system. Blanch was the government's chief consultant on computation during the war, and was also working with introductory work on electronic computers. The years following the war were a struggle for women in mathematics. The government rushed to rebuild the economy and find jobs for returning veterans, neglecting women's contributions while the men were away at war. Some senior women were able to retain their jobs at the Mathematical Tables Project, but none were given a position of authority (Grier, 1997).

In the 1950s, Blanch took a position as director for computing at the Institute for Numerical Analysis. However, Blanch faced challenges due to the politics of the Cold War and the removal of alleged communists from government positions. Blanch was not married, did not have any children, and her sister was a Communist, which caused her to be denied security clearance. This was a red flag to the Department of Commerce, who feared Communists infiltrating high government circles and targeted the Institute. The National Bureau reviewed the works of the Institute for Numerical Analysis, recommending its closure. In 1954, Blanch decided to take a position as a senior mathematician for the Air Force, where she worked on numerical methods to handle problems of turbulence, airflow, and transonic and supersonic flight. During her time at the Air Force, Blanch published about half of her 30 papers and became an early member of the Association of Computing Machinery (Formal, 2021). Some of Blanch's papers were "Table of Modified Bernoulli Polynomials" (1950), "On the Numerical Solution of Equations Involving Differential Operatots with Constant Coefficients" (1952), and "Subsonic Oscillatory Aerodynamic Coefficients Computed by the Method of Reissner and Haskind" (1953). Blanch worked on finding ways to compensate for mathematical deficiencies in computers designed for industry. Before retiring, the Air Force recognized Blanch for her contributions with awards and promotions. In 1963, the American Association for the Advancement of Science elected her a fellow and she received the Air Force Exceptional Service Award. In 1964, Blanch received the Federal Woman's Award from President Lyndon Johnson.

Blanch's work with numerical analysis for the early computers was used in an abundance of different companies and government jobs. She paved the way for women in mathematics and science and her contributions to the Mathematical Tables Project serve as a testament to the importance of the advancement of technology and the first electrical computers. Gertrude Blanch's work deserves more acknowledgment, inspiring future generations of mathematicians and computer scientists.

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An Interview with Brooke Muñoz-Halm, the Creator of Pawsibilities

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sponsored by Mark Rider, MBA

Abstract

Life after college can be isolating due to the lack of opportunities to meet like-minded people while traversing living in a new city. Meet-up app users are not satisfied with their current offerings, like Bumble BFF, because of its blurred intentions and lack of safety net. Pawsibilities aims to connect a community of dog owners to share a love for their furry friends in a safe and secure environment. By equipping our community members with features like location partnering with nearby dog-friendly spaces, geolocation technology, differentiated profile metrics, and in-app safety measures, we bring owners together so they can build meaningful relationships that last a lifetime.

Can you give an abbreviated version of your pitch for Pawsibilities?

Brooke Muñoz-Halm: Yeah, absolutely. So Pawsibilities aims to connect a community of dog owners who share a love for their furry friends in a safe and secure environment. The intention is to equip community members with features like location partnering with nearby dog friendly spaces, using geolocation technology, differentiated profile metrics, and in app safety measures, to bring those pet owners together so they can build meaningful lifelong friendships.

To break these down, the location partnering refers to someone from Pawsibilities, like a Pawsibilities representative, with boots on the ground going to these places and verifying that they are, in fact, dog-friendly spaces and that they're not just someone's private backyard. And that could look like hiking trails, dog parks, community marks, main street, pet-friendly restaurants, etc.

Secondarily is the geolocation technology. This one isn't groundbreaking new technology as aps like Tinder and Bumble already use it. It's already used to match users based on their proximity to each other, and for Pawsibilities, it matches users based on proximity to a location. So it's just adding a third location to that tech.

Then, there are the differentiated profile metrics. This is based on a proprietary algorithm that builds the "Treaty Scores," which is the individual user score, and the "Unleashed Score," which is the score given to locations, and those are to match users with other users in the most optimal dog-friendly configuration to each other and locations.

The fourth is security, and this is what really sets Pawsibilities apart from different apps. There are two main features that keep it secure. The in-app communication system rewards users for continuing to talk to each other through the app. The women, almost all of the women, who I spoke to said that they felt uncomfortable giving their phone numbers out too soon, too early. So Pawsibilities rewards users for continuing to use that in-app communication. It builds a best friends list. This makes it so users don't have to give out personal information until they're ready and can use it as an excuse of wanting to build their best friend score. Second is a two-strike report system instead of three strikes. If two users say a person was inappropriate with them—for example, if they were trying to flirt or be romantic with unwanted advances etc.—it only takes two people to get someone completely kicked off of the app. This is from my own personal experience with friends apps and the reviews that I found for competitors like Bumble BFF. People feel really uncomfortable with that blurred line of intentions for users. So that one was really important—if you try to make Pawsibilities anything more than a friend-making app, that you are removed.

Going further in differentiating Pawsibilities from other apps, how is this different from similar competitors?

Brooke: Yeah, I really think it is the security aspect and then there are other portions of it. I am still the main creator of Pawsibilities and if it hits the market that it would be woman of color and queer owned which is something I'm always proud of, to be able to put my name and my heritage on something like that.

I also have a background in market research so there's a lot of market research already before this app is made tangible. For the market research process I sent out a five minute survey called a screener. They go through demographic questions: what is your age, what is your income, where are you from, ect. This is done in order to determine if they are the target market for the app, and then I reached out to people from there to have sixty minute IDIs, or in-depth interviews. I sat down with five women that match the target audience and asked them loads of questions.

What inspired the idea for this app? Where do you see this potential app going?

Brooke: I think that my own experience really inspired this app. I think it's hard to make friends. When the intention of making friends is so blurred, it's hard to make friends and know we're both trying to make friends, that there's no trying to be more than that. So, I think that's what mostly inspired it. I wanted to have a space where I could meet new people and have the ice broken. For example, whenever I walk my

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dog in the main street in my hometown, everyone's always coming up to me and they ask to pet my dog and then they start a conversation: how is your day, what are you doing around here, do you live here, what's your dog's name? His name is Mochi and he breaks the ice for me.

I was thinking of how I can make this an even safer space, right, because when I'm walking there might be people that are dangerous, there might be people that have bad intentions. So I thought, let's put this in an app. Let's make it so I can sit at my home where it's safe to be able to say yes, I trust this person or yes, I want my dog to meet this dog. This dog is vaccinated. I know because it's on the app. And so the intention was based on my experience and wanting to create a safe space for people to have a virtual version of your dog breaking the ice for you.

What is your experience with designing and performing presentations?

Brooke: I've always excelled at public speaking, even as a kid, and I noticed that in myself and teachers noticed that so it was nurtured internally and externally for sure. And then in highschool I did freelance graphic design, and I always had an eye for art. So I think that really built my ability to create compelling and visually interesting presentations.

In your opinion, what are some of the most important elements of a good presentation?

Brooke: So aside, or second only, to the actual information that is on the slide, I think the most important thing for presentations is data visualization. There's actual science that backs that you have to have x amount of white space on your slides for there to be optimal comprehension from your audience. You know, it's not just an art, it is a science of data visualization.

I think that's something that I always find frustrating when I look at other people's presentations if there's lots of quotes, texts, infographics, etc. It's hard for me to know where to start. I get overwhelmed just looking at it, especially if the presenter is talking, then I'm not even listening to the presenter because I'm trying to figure out what's going on on the screen. So, I think really second only to the actual information on the slide that data visualization is key.

Is there anything you do to prepare for presentations, or this one in particular?

Brooke: Yeah, I practice a lot. I go through presentations back from the start every time so if it's a 10 slide presentation and I screw up slightly on slide 2, I start from the beginning again and I keep going until I go through perfectly and then I do it one more time to make sure it wasn't just a fluke.

So I definitely practice a ton of times and then I think what sets my presentation style apart from other people is that I still have that anxiety, right? My palms are sweating,

my legs are shaking. I feel stressed and anxious. But I remind myself that I'm stressed about this thing because I'm about to do something that's worth being stressed about so my anxiety turns into adrenaline really quickly and then I step up there and I just become a performer, almost, like an actor. But I can still feel the stress, I'm still anxious, my hands are still sweating, etc. But it feels like this adrenaline and then once everyone claps, it's like this euphoric feeling for me.

So definitely practice and then just telling myself this is worth being stressed about and that's why my body is having this biological reaction. And that's so thrilling to have something exciting to create.

Was there any difference between the first time presenting and the most recent?

Brooke: Yes. By the time I did the GREAT Day presentation it was already my sixth or seventh time presenting the exact data. I did two in-class presentations and then I did two separate presentations at Geneseo's Dragon Den, which is Geneseo's version of Shark Tank, which is wonderful and I would recommend it to literally anyone that is looking to do public speaking or into entrepreneurial anything really great. And then, once for preliminary competition for the New York State Business Plan Competition (NYBPC) and then second the actual performance for the actual presentation at the NYBPC and then GREAT Day.

So by the time I got to GREAT Day, I had already presented it so many times and the data hadn't changed so the information was still there. I knew it. I felt confident still, you know, still anxious at GREAT Day. Anxiety was the same as my first two in-class presentation anxieties, although a lot less stressed for GREAT Day because that was my last one. My parents were there to see me, my friends were there to see me. So I think the most anxiety-inducing presentation for me was the NYBPC. The prep was all the same, I always go through presentations over and over until I get it perfectly through twice. I do the same talking myself up mantra.

I think the difference for Pawsibilities compared to other presentations that I've done is that my entrepreneurial professor, Professor Mark Rider, was so supportive and understanding. He would talk me through everything and would walk me through my anxieties, helped me and worked as a sounding board for me, and was there for me from start to finish. He told me don't sweat the rejections and was there to praise me when I got successes. So I think that was the biggest difference for Pawsibilities to other presentations and then from my GREAT Day presentation to the first ever in-class presentation I think it just paid off that every time I got a little prouder and a little more confident, a little more excited. But yeah, same stress and the same anxieties.

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That's wonderful how supportive your professor was during the process.

Brooke: He really was great. And the Dragon's Den is completely his brainchild. He brings in community members. I got job offers on those days and so did others that presented. It's such an amazing experience, I can't praise it enough.

Is there anything else you would like to talk about?

Brooke: I would love to take the space to say to other women, and other women of color at Geneseo, to feel confident and work hard. We have to work twice as hard to be thanked and praised in the way that other non-women of color are and I think that it's really worth the payoff. It's worth sticking together and having people that support you like my professor, like my parents, like other women of color. So, I think Geneseo has been doing a really great job of supporting us. Also, I notice that there's the women's Dragons Den which was really exciting to women in entrepreneurship, which is also exciting.

So yeah, I think keep trying to put yourself out there. Rejections are going to come and they're going to sting a lot and they're going to hurt but just keep working and keep pushing because it's important to get your name out there. I'm always proud to put my last name on things, to put Muñoz on things. It's my mother's last name, I'm very proud of that. And so I think that's the extra thing. I would love to say that you should be proud of our backgrounds and want to put our names and be confident and excited to put our name on things.

Laborers and Laundrymen: Gendered Sinophobia and Sub-Masculinity in the Americas

Adam Comstock

sponsored by Ling Ma, PhD

Abstract

This paper analyzes pre-existing scholarship and primary sources to connect 19th–20th century anti-Chinese sentiment to the notions of masculinity in the Americas. It takes a trans-national approach, examining Chinese labor migrations to both Anglo- and Latin-America and the effect they had on notions of gender. The paper argues that frontiersmen in the Americas, many of whom engaged in non-normative gender and sexuality practices, used anti-Chinese xenophobia to reinforce traditional masculinity. Connecting phenomena of race, gender, and sexuality, it takes an intersectional approach to history.

In 1869, Thomas Nast drew a cartoon for an edition of *Harper's Weekly* entitled "Pacific Chivalry." In it, a muscular frontiersman wearing a hat labeled "California" reaches out to tug on the queue of a Chinese man. California brandishes a cat o' nine tails, ready to strike. The Chinese man, much shorter and dressed in a skirt, tries to run to no avail (Nast, 1869). A year later, Nast's depiction of Chinese men changes significantly. In "The Martyrdom of St. Crispin," two tall Chinese men lurk over a cobbler. They brandish swords labeled "cheap labor" and "chop sticks," ready to cut down the halo-wearing patron saint of leatherworkers (Nast, 1870). Nast, within a year, managed to portray Chinese men as small, long-haired, skirt-wearing victims of violence and tall, violent, sword-wielding murderers of honest labor. While seemingly contradictory, these two depictions coexisted in many forms of anti-Chinese sentiment.

The Sinophobia experienced by Chinese male laborers in the Americas from 1850 to the onset of World War II was unique in that it both masculinized and feminized the objects of its hatred. I wish to argue for a new interpretation of anti-Chinese sentiment, one which posits a form of sub-masculinization against Chinese men in the Americas. Throughout this paper, I will discuss the reasons why Chinese men were forced to occupy positions that subjected them to gendered racism, such as occupying feminine labor roles and participating in gang-related violence. With this in mind,

I will argue for a different interpretation of gendered Sinophobia. More than just feminized, Chinese men were relegated to an entirely different gender category, one I term "sub-masculine." While displaying some traits of masculinity and femininity, Chinese men were denied participation in the masculine and vilified for their participation in the feminine, locking them entirely out of gendered categories. In positing a new lens through which to view Chinese immigration, I hope to contribute to the growing trend of gender-based historical analysis. In this work, I will repeatedly use phrases such as "Chinese men," "Chinese male migrants," and similar terms. These do not refer to all Chinese male migrants, but to those who came in large waves of migration to seek opportunities in manual labor. I am discussing this subset of immigrants because they were the subject of the Sinophobia I intend to explore. While Sinophobia undoubtedly extended to even highly educated Chinese immigrants, the anxieties leading to its prevalence in law and culture were centered on the thousands of low-wage Chinese workers.

One of the largest waves of migration yet seen in the Americas began with the discovery of gold in the South Fork American River. By 1851, 25,000 Chinese immigrants had entered the United States to search for gold (The Library of Congress, n.d.). However, their ability to seek the fortunes of their desire was quickly curtailed. In April of 1850, the California state legislature passed an act which, according to historian Susan Lee Johnson (2000), "imposed a licensing tax of twenty dollars per month on all non-U.S. citizens at work in the diggings" (p. 210). The law targeted Chinese miners, forcing many of them out of mining work and creating a surplus of labor. Compounding this was the 1875 Page Act, designed to limit the number of Chinese women entering the United States. In speaking of its passage at his annual address to Congress, President Grant brought up the evil of "the importation of Chinese women, but few of whom are brought to our shores to pursue honorable or useful occupations" (Grant, 1875, p. 3). While local efforts had already drastically limited the presence of Chinese women in California, the Page Act cemented the sex imbalance present among Chinese communities in the West.

This sex imbalance had already existed amongst white Californians as well. Even in 1880, thirty years after the onset of the Gold Rush, Californian men outnumbered women by 150,000 (U.S. Census Bureau, 1880). The impact of this sex imbalance, coupled with early Chinese exclusion, was felt greatest in the labor market. As Joan Wang (2022) succinctly puts it in her article on the subject, "laundry is women's territory (p. 52)." The lack of women then created a vacuum which was often filled by the surplus of Chinese male laborers. Wang writes that Chinese men "served as temporary replacements for white and black female labor" in the American West (p. 60). Exclusionary laws relegated Chinese men to the economic, and eventually cultural, status of women. Journalist and Grant biographer Albert Deane Richardson (1869) wrote on this phenomenon in his 1869 account of the American West *Beyond the Mississippi*. In it, he describes the prototypical Chinese migrant, who acts "perfect in imitation: where female labor is scarce he proves unrivaled at nursing, cooking, washing and ironing (p. 390). Here, one can see an early form of the changes in gender assigned to

Chinese men. This feminizing trend continued to grow outside of the sphere of economics and into a more political domain, becoming the subject of racist propaganda.

To the Sinophobe, the clearest visual evidence of the feminine nature of the Chinese man was his hairstyle. Nearly ubiquitous in anti-Chinese narratives is the queue, the distinctive hair braid worn by Manchu leaders and, by extension, Chinese citizens during the Qing era. Fascination with the queue is seen in many newspaper articles in California during the late 1800s. One article from the *San Francisco Chronicle* describes the queue as a "pigtail" while discussing shaving the queues of Chinese prisoners. The author goes on to malign women using the leftover hair to build elaborate wigs, associating the frivolity of feminine hairstyles with the exoticism of the queue ("Thereby Hangs a Tail", 1873). Similarly, an article in the *San Francisco Examiner* from 1874 writes an account of girls wearing their hair "combed back plain and tied in a Chinese pig-tail" ("The Fashion", 1874). This trend extends beyond written works and into the realm of political cartoons. The queue is featured prominently in the cartoons discussed in this paper's introduction and is seen in many more. Take another *Harper's Weekly* cartoon for example, 1885's "'Here's a Pretty Mess!' (In Wyoming)," about the Rock Springs massacre. In the image, Nast (1885) draws two Chinese men wearing silk skirts, their queues stretching down to their knees. They look on at the scene of the massacre, coquettishly fluttering paper fans over their faces. This imagery emphasizes the feminine dress and hair of Chinese men, and their innate femininity, considering their bashful response to the violence. Another use of visual language to connect the queue to femininity is seen in a cartoon from *The Wasp* dated to 1887. Written in response to a law that granted exceptions to Chinese domestic servants, the cartoon displays a flood of Chinese men wearing long braids and dresses, clutching fans and dolls ("Another Bar Down", 1887). These depictions, whether in print or drawn, strongly associated Chinese men with feminine features.

On the opposite side of things, there existed a force which sought to vilify Chinese men by way of their excesses of masculinity. While the degree to which Chinese men were considered masculine will be discussed shortly, they were certainly associated with vices tied to manhood such as inclinations towards sex and violence. Mildred Wellborn wrote about this matter in her article on the leadup to the Chinese Exclusion Act. Wellborn (1913) writes that moralists in California viewed newly arrived Chinese immigrants as "a people who had no respect for chastity, many of their women being prostitutes; a people given to gambling, living in filthy places and keeping opium dens of disgust and horror" (p. 50). The fear of sexual exploitation was furthered by the introduction of race. The dominance of white women by Chinese men was a fear which touched on both gender and race for California's white men who saw themselves as "protectors of the nation's morality and families" according to historian Karen Leong (2001, p. 134). An instance of this anxiety can be found in a 1910 edition of the *Santa Cruz Evening News*. The paper features an article about a Christian mission in Chinatown. In the article, the director of the mission laments its progress, stating that "more women missionaries are degraded by Chinese men than are Chinese men converted by American girl missionaries" ("Attraction of Sex Dominates",

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1910). She argues that the sexual proclivities of Chinese men make them beyond religious redemption. The article ties this to the recent murder of a white girl by her Chinese lover, connecting a broad anxiety of white girls running off with Chinese men to an acute point of violence.

Another relevant specter of the violent Chinese man was his propensity for gang violence, as expressed through popular narratives of the Tong Wars. With the decline of previous Chinese interest organizations, local tongs, mixtures of labor unions, mutual aid societies, and fraternal orders, began to take over Chinatowns (O'Mahony, 2022; Dillon, 1962). Eventually, some tongs morphed into organized crime syndicates, involving themselves in prostitution, extortion, gambling, and drug-smuggling (Young, 2014). While there were many violent exchanges between tongs, the ways California presses framed Tong Wars played into an essentialist image of Chinese men as violent. San Francisco newspapers were fascinated with Tong War narratives, writing about instances of violence in a formulaic manner. In a July 1889 issue of the *San Francisco Chronicle*, the author describes the perpetrator of a Tong War killing as follows: "As is usual in these Chinese murder cases, the heathen who did the killing disappeared". The victim, Leu Jing, was taken to a hospital where "it was found that the intestines were protruding" ("Shot in the Back", 1889). From here, the article describes, in extreme detail, the complicated web of provocations and reprisals between the tongs. Quite bizarrely, over a year later, a different San Francisco newspaper, the *Examiner*, published a nearly identical article. In this one, the perpetrator, Wong Ah May, "as usual, escaped, and is now at large" and Wong Fook, the victim, was receiving medical care when "the entrails began to protrude" ("Another Chinese Shot", 1890). This article also features the complex series of attacks which led to the shooting. This pattern also continued outside San Francisco. The *Los Angeles Herald*, also in 1890, wrote about a shooting, the shooter fleeing, and an almost comical account of the buildup to the shooting ("A Chinese War", 1890). These three stories, from different times and locations, bear striking similarities. This indicates that publication on Tong Wars was systematized, part of a daily account of the violence native to Chinatown. This chain of reported violence is intended to confuse the audience, making Chinese life seem absurd. This violence was, at times, compared to Italian vendettas, Italians being another group stigmatized for male violence ("Tricky Mongols", 1890). The Chinese man's natural propensity for violence, in the eyes of Sinophobes, made him unfit for society.

Much of the currently existing scholarship on Sinophobia focuses on either the feminizing or the extreme masculinizing of Chinese men. I would argue this misses the true depth of Sinophobia and would propose a different interpretation of the data. Chinese men could not have been solely feminized, as they were also strongly associated with the excesses of masculinity. They were also systematically kept out of dominant forms of socially accepted American masculinity. In this way, Chinese men were categorized as "sub-masculine," a non-normative prescriptive gender category. I am suggesting a new interpretation of the way the male Chinese immigrant gender was constructed by marginalizing forces. To support this notion, one must look at the dominant ideals

of American masculinity and the ways in which Chinese men were disallowed from participation. In his book *Manhood in America: A Cultural History*, Michael Kimmel (1996) writes of the competing forms of American masculinity around the middle of the nineteenth century. Of the archetypes he identifies, the "self-made man" became the dominant form during the nineteenth century. The self-made man is primarily concerned with capital and republican values. Kimmel quotes founding father Benjamin Rush, who advocated for men to become machines of republicanism. This idea of manhood is similar to E. Anthony Rotundo's idea of "passionate manhood," which incorporates ideas of the male body, competition, and "primitive" masculinity (Winter, 2004). It emphasizes success in business and power over others, just as Kimmel's self-made man does. Rotundo also incorporates elements of protection and providing for others. Rounding out our idea of American masculinity is Karen Leong's summary of what it meant to be a man and, therefore, a citizen in the mid-nineteenth century. Leong (2001) writes that "the American man demonstrated his independence and self-sufficiency by providing economically for his dependents," those being his wife and children (Leong, 2001). The two most important criteria for this study will be holding republican values and providing for a family. These criteria were made impossible for Chinese men to achieve, thus locking them out of participation in society as men.

In terms of holding particularly American values, Chinese men were largely blocked from becoming machines of republicanism. An example of this restriction is seen in *People v. Hall*, a landmark case in California's Supreme Court regarding the rights of Chinese immigrants. After a contentious appeal of a murder trial, the State Supreme Court disallowed Chinese testimony in criminal cases. In the majority opinion, the justices wrote that "the same rule which would admit [Chinese people] to testify, would admit them to all the equal rights of citizenship, and we might soon see them at the polls, in the jury box, upon the bench, and in our legislative halls" (People v. Hall, 1854, p. 404). The opinion indicates the explicit attempt to restrict Chinese immigrants from accessing the apparatus of democracy, namely due process. Similar to the South, poll taxes in California restricted the ability of racial minorities to vote in elections, at least until their repeal by ballot initiative in 1914. While many of the restrictions to Chinese immigrant's interaction with republican institutions were initially *de facto*, they became codified in California due to the re-written 1879 Constitution, drafted after a takeover of the state legislature by the rabidly anti-Chinese Workingman's Party of California. The new constitution granted voting rights to any citizen provided they were "no native of China" (Ca. Const., 1879). This was extended to the entire United States by way of the Chinese Exclusion Act. In addition to prohibiting the entry of Chinese migrants to the United States, the Act made it so "no State court or court of the United States shall admit Chinese to citizenship; and all laws in conflict with this act are hereby repealed" (Chinese Exclusion Act, 1882). By denying citizenship to all Chinese people in the United States, the act barred them from the core of participation in republican government: electoral franchise.

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The ability to provide for and protect a wife and family was also made nearly impossible for Chinese men. While some wealthier immigrants traveled to the Americas with their families, this was largely not the case for laborers (Lyman, 1968). As stated earlier, the Page Act created a large sex imbalance in the Pacific Coast's Chinese population. The lack of Chinese women in the Americas was a problem for Chinese men and their ability to establish families, as there were difficulties then in crossing the racial boundaries of marriage. The fear of interracial relationships was a focal point of the anti-Chinese fervor of the late nineteenth century. Between 1860 and 1910, seven states in the South and West passed laws specifically forbidding white-Chinese marriage (Teng, 2013). Further discouraging these marriages was the Expatriation Act of 1907, under which American women who married foreigners had to renounce their American citizenship and take on that of their husbands (Expatriation Act of 1907, 1907). Stanford Lyman (1968) summarizes these challenges succinctly in an article on the families of Chinese immigrants. He writes that "for the bulk of Chinese immigrants, the establishment of a family in America was impossible" (p. 326) While the legal barriers to White-Chinese marriages were certainly high in California, there were instances of interracial marriages which filtered into the newspaper system. A 1912 article in Red Bluff, California's *Weekly Sentinel* described a marriage between a Chinese man, Tom Moy, and a white woman, Josephine Carlson. The author writes that the ceremony was interrupted by a mob, five hundred strong who attempted to disrupt the wedding by throwing stones "until every window in the house was shattered" ("Cruel Mob Routs Wedding Party", 1912). Another, more sinister interest in these marriages is seen in an 1882 *San Francisco Examiner* interview with Dr. Meares about leprosy. The interviewer and doctor discuss the spread of leprosy as well as syphilis. Dr. Meares states that, in terms of disease spread, "the great danger to Americans is from the intermarriage of the Chinese with our people". When asked about the detection of leprosy, Dr. Meares implies that most Chinese immigrants have dormant cases and that the anti-miscegenation laws in the West were preventing spread, unlike in the East, where marriages "are getting to be too common" ("Leprosy", 1882). While families between white women and Chinese men were possible in some instances, they were often not viable due to public scrutiny. Marriages were so infrequent that it was not until 1950 that a majority of Chinese-Americans were born in the United States (Lyman, 1968).

Due to these legal and societal pressures, Chinese men were locked out from the full categorization as men in the United States. Chinese men were clearly thought of as possessing some innate femininity, placing their prescribed gender below masculinity in a gender hierarchy. This was also the case with queer men in the United States at this time. Predominant theories of sexology explained same-sex attraction as "inversion," the possession of some aspect of the opposite sex (Ellis, 1908). This allowed the denial of rights to queer men on account of their overly feminine nature. But this misses the other important pillar of gendered Sinophobia: hyper-masculinization. Chinese men were heavily associated with innate propensities towards physical and sexual violence. This was also the case with Black men, and a frequent justification for

the denial of their full manhood was a fear of their supposed innate propensity toward violence, especially sexual violence, directed at white women (Wells-Barnett, 2020). But Black men were not feminized or associated with the domestic in the way Chinese men were. Thus, Chinese men could not have been excluded from manhood on the same grounds as either queer men or Black men, two potentially analogous groups. This is the basis for my notion of sub-masculinity. Chinese men were denied masculinity due to their femininity and were ineligible for femininity due to their innate maleness. In this way, the nature of gendered Sinophobia in the United States could not be explained merely by feminine or masculine means, but only by incorporating both into a new conception of a gendered category.

It would be inappropriate to end this discussion with an overwhelming account of oppression against Chinese-Americans and not discuss their own notions of masculinity. Strong scholarship should seek to not only explore and rearticulate history through new lenses, but also to challenge dominant narratives, either those in contemporary historical study or in the period about which one writes. Like that of the United States, Chinese masculinity is quite difficult to narrow down. Bret Hinsch adequately provides an overview of masculinities in China in his book on the matter. Hinsch (2013) explores the transition in the late Qing era away from an extended family to one like the Western nuclear family. Rather than staying with their parents after reaching adulthood, a son could seek "a job in a factory, office, or shop" as they "offered a man early economic independence" (p. 144). He identifies a similar trend for fathers and husbands, who also searched for employment to provide for their immediate families, no longer relying on a broader family structure (Hinsch, 2013). These factors can be seen as reasons for Chinese emigration to the Americas in search of employment, both for oneself and one's family. This is the idea of masculinity favored by Hsin-yun Ou in their article about Sinophobia which argues that, although Americans viewed their labor practices as feminine, this view likely did not permeate to the men themselves. Hsin-yun Ou (2010) writes that the men saw themselves as "breadwinners and household patriarchs," being the man of the house if they were able to send money back to China in support of their families (Ou, 2010). In this way, regardless of occupation, if a Chinese male laborer was earning money, he was embodying what it meant to be a man. This explains the willingness of Chinese men to inhabit these demeaning, feminized labor roles. While white men saw themselves as above these types of domestic labor, Chinese fathers and husbands working in the Americas worked these jobs to fulfill their obligations as men.

The utility of reframing Sinophobia as a sub-masculinizing force is to reconsider its dehumanization. By denying full participation in any gender category, Anti-Chinese sentiment, both legal and cultural, forbade the full expression of Chinese men as men. However, there were avenues by which Chinese men reaffirmed their masculinity, pushing further on the path towards liberation. Another goal of this new manner of consideration is the advancement of Sinophobia into the purview of gender history. By examining more than just the manhood of Chinese male laborers, but the weaponization of gender and the ways people inhabited and performed those roles allows

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a reexamination of historical notions of gender and how they interact. By further elucidating the intertwined histories of the Pacific world, we shed light on the distinct and yet interrelated cultures therein.

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David Bowie: Face the Strange

Alannah Egan

sponsored by Monica Hershberger, PhD

Abstract

Pop icon David Bowie (1947–2016) was a pioneer in the music industry and the arts as a whole. In addition to his innovations in music, Bowie made strides in the effort to further the acceptance of the LGBTQ+ community and the movement for gay rights. In this paper, I argue that David Bowie used his music and androgynous fashion alongside his personal life to commit himself to the cause of LGBTQ+ rights. I also show how Bowie's rise to fame coincided with the Space Age and how he capitalized on the public's excitement over the unknown to illustrate how and why the LGBTQ+ community should be accepted as a valid, integral part of society. This paper explores and solidifies these connections through historical accounts of the time period, personal stories and experiences surrounding David Bowie and the plight of the LGBTQ+ community, theoretical analyses of Bowie's music, and the discussion of studies regarding David Bowie and his social impact. The immediate goal of this paper is to illustrate Bowie's contributions to the movement for LGBTQ+ rights, and on a larger scale, this paper serves to convey the importance of music and artists in furthering the fight for social justice of oppressed groups.

On Saturday, May 28th, 2022, I stood about five yards from the main stage at the Boston Calling Music Festival where the Saturday night headliners, Nine Inch Nails, began playing "I'm Afraid of Americans" by British rock star David Bowie. After over two years of waiting, through a pandemic, political and social turmoil, and the sea of personal struggles that accompanied these life-changing events, a diverse group finally came together to celebrate one cause that unfailingly always brings people together—music. The fact that Nine Inch Nails decided to cover "I'm Afraid of Americans" was symbolic of how this singular performance brought together this crowd, which was full of people hoping to see artists ranging from Avril Lavigne to the Backseat Lovers to, of course, Nine Inch Nails. Not many people today know who Nine Inch Nails are, but those who know them, know them. In sum, they're an industrial rock "band" from the 1990s. I put "band" in quotations because in reality, the frontman, Trent Reznor, composes and records all of their music on his own and then gathers a group of musicians to perform with him. What's important to note about Nine Inch Nails is that they are nothing like David Bowie. Or, more accurately, at first glance (or first listen), they are nothing like Bowie. Their dark, almost chaotic sound is vastly different from Bowie's more upbeat, popular music. However,

when looked at more deeply, the similarities between the two musicians greatly outweigh the differences. They are artists who use their music and fanbase as a way to express themselves and their personal struggles. They defy the expectations of what a traditional rock star or popular music artist should look like, sound like, and what they should write about. Upon further digging, it comes as no surprise that David Bowie is in fact one of the pioneers of this boundary-breaking tradition that many musicians have adopted today. He has directly inspired artists across the musical spectrum, from Nine Inch Nails, Nirvana, and the Smashing Pumpkins to Harry Styles. All of these ideas and lineages of musical inspiration came together in this moment, as a crowd of thousands of people were brought together by this one band covering this one song, after waiting for over two years to experience this exact moment.

Being different has historically required a great degree of bravery and courage to jump into the unknown. Historically, defying arbitrary societal norms resulted in social exile, legal consequences, and in some cases violent physical attacks. Despite these unjust repercussions, there have been brave souls in our history who openly, unapologetically, and publicly fought for their right to exist, to take up space, and to contribute to society even though they do not fit the restrictive molds that have been given to them. Art and music are a reflection of our society, and David Bowie is one of the most notable figures who paved the way for bringing LGBTQ+ issues into the public eye. As Justin Vivian Bond, a drag cabaret performer, notes, "Bowie was not an activist in the traditional sense…but as a visionary and groundbreaking artist Bowie provided a soundtrack and visuals which reshaped our world." (Bond, 2016). In June 1972, the record label RCA released *The Rise and Fall of Ziggy Stardust and the Spiders From Mars* (Cromelin, 1972). This album conveys the story of a bisexual, extraterrestrial rock star who came to Earth to share his music before his inevitable death five years after his arrival (McLeod, 2003). The single for this record was "Starman," released in April of 1972. Performances of "Starman" often incorporated androgynous fashion and displays of sexuality, and its musical lineage traces back to Judy Garland's "Somewhere Over the Rainbow." Combined, these aspects transformed it from a single to a melody of LGBTQ+ pride and protest, and thereby turned David Bowie into an LGBTQ+ pop icon. As a whole, the album *The Rise and Fall of Ziggy Stardust and the Spiders From Mars*, provided a voice and a symbol for the LGBTQ+ community of the time, when such topics were still taboo to most of society. By doing so, this album helped initiate the movement for LGBTQ+ rights.

To set the stage for the rise of David Bowie and his other-worldly persona(s), the late 1950s marked the beginning of the Space Age, and before that the media was increasingly interested in the alien and unknown. As Ken McLeod notes in his 2003 article "Space Oddities: Aliens, Futurism and Meaning in Popular Music," the 1950s saw a boom in the amount of media created portraying these ideas, with films such as *The Day the Earth Stood Still* and *War of the Worlds* being released in the early 1950s, as well as the publication of many science-fiction magazines and novels. This coincided with the rise of rock and roll as a genre, with most of its pioneering records being released at the same time (McLeod, 2003).

However, while McLeod convincingly argues that this obsession with space allowed for the later acceptance of ideas and lifestyles that strayed from the norm, such as LGBTQ+ culture, it would take years for this idea to take hold socially and politically. In England, for example, homosexuality was only decriminalized with the passing of the Sexual Offences Act of 1967. Similarly, in the United States, the American Psychiatric Association did not remove the classification of homosexuality as a "psychiatric disorder" until 1973 ("The 1960's", n.d.). In the public, people who identified as LGBTQ+ were often targets of violent attacks. One such example is of Kenneth Crowe, a teacher in England who was beaten and murdered for dressing in his wife's clothing ("Sexuality", 2022). While it appeared that 1950s society was moving forward, given the advancements made in science and space exploration and what these indicated for what was considered "normal," it was still taboo for anyone to identify with traits that strayed from the white, heterosexual, cisgender norm.

It was into these harsh political and social conditions that David Bowie entered. While he began his career with a more mundane public persona, he quickly became more outrageous—and unapologetically so. Despite the social and political repercussions that came with identifying as LGBTQ+, David Bowie openly embraced his sexual orientation and defied the common misconception of gender being a strict binary. During an interview in January of 1972, Bowie claimed: "I am gay and always have been, even when I was David Jones [David Bowie's birth name]" (Hewitt, 2016, p. 58). Only six months later, in June of 1972, the legendary album, *The Rise and Fall of Ziggy Stardust and the Spiders From Mars* was released, bringing to the public a story about "a bi-sexual alien rock superstar" (Hewitt, 2016, p. 53). Numerous writers and music critics agree that this album is what pushed Bowie to the mainstream—an unheard-of accomplishment, as he was the "first English pop star to declare openly his bisexuality." (Buckley, 2019). Bowie also used this album to explore and promote androgyny. He began exploring androgyny prior to *Ziggy Stardust*—for example, on the cover of the UK version of his 1970 album, *The Man Who Sold the World*, Bowie sports long hair and a dress. However, this album did not sell very well, and so he did not truly bring androgyny to the public eye until *Ziggy Stardust* (Hewitt, 2016). The idea of androgyny, while slightly more familiar to the public due to the popularity of unisex fashion in the late 1960s, was still an incredibly foreign idea to most of the public and was received with rather mixed, generally confused reactions (Segal, 2016). Richard Cromelin, a reporter for Rolling Stone magazine in the 1970s, while praising the music of *Ziggy Stardust*, asserts that "we should all say a brief prayer that his fortunes are not made to rise and fall with the fate of the 'drag-rock' syndrome—that thing that's manifesting itself in the self-conscious quest for decadence which is all the rage at the moment" (Cromelin, 1972). Despite these critiques, Bowie's gender-norm-defying fashion statements went on to influence famous designers such as Alexander McQueen, Jean-Paul Gaultier, and Tommy Hilfiger (Segal, 2016). Cromelin and others missed the mark. Bowie's persona was more than a trend, and he was successful on the critical level of bringing the conversation of gender as a spectrum into the mainstream.

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Clearly, David Bowie was using his alter ego of Ziggy Stardust as a conduit for his own self-exploration, projecting his struggle of defining his sexual orientation and gender expression onto this alien rockstar. Circling back to the public interest in extraterrestrials at the time, since the purpose of space exploration is to discover the unknown, the public was able to define these aliens and alien ideas however they saw fit. David Bowie took this opportunity to define them as the sexually "deviant," the gender-bending—LGBTQ+ culture that was counter to the mainstream—and by doing so, he began to give power to these ideas that had been suppressed for so long. This power was exponentially increased following his performance of "Starman" on Top of the Pops in July of 1972. Around a minute into the performance, Bowie casually and affectionately slings his arm around his bandmate Mark Ronson's shoulder while singing the chorus. As Paolo Hewitt (2016) asserts in his book, *Bowie Album By Album*, "In that one act David Bowie went from being a pop star to a phenomenon" (p. 53). That one moment combined with his androgynous image, then-recent statements about being gay, and the fact that the character he was playing was openly bisexual, made for an incredibly powerful and shocking performance. As one YouTube user notes, it was "[a] different [time] back then…. It was a much more macho culture and any suggestion of being gay was enough to have anyone of both sexes be shocked to the core!" (Mitchell, 2022). Similarly, another YouTube user claims that "it was shocking at the time for the establishment. But not to us star children" (Hubbell, 2020).

It is also important to note "Starman's" nod to the iconic LGBTQ+ anthem, "Somewhere Over the Rainbow," recorded by Judy Garland. As Sasha Geffen (2020) illustrates in their book *Glitter Up the Dark: How Pop Music Broke the Binary*, "Somewhere Over the Rainbow" was a "recognizable symbol of in-group belonging in twentieth-century gay culture" (p. 34). Historically, this piece has been interpreted as a beacon of hope for members of the LGBTQ+ community to escape the oppression of a heteronormative, white, male society, and find a place "over the rainbow" where LGBTQ+-identifying people "can live openly and fully without judgment, social rancor, and rejection" (Davis, 1996). Similarly, Judy Garland herself is considered "a saint" in gay culture, an emblem of "the diva" that many members of the LGBTQ+ community, especially within the music world, closely identify with. Philip Brett and Elizabeth Wood (2001) refer to this as "the diva effect" in their article, *Gay and Lesbian Music*. Particularly, those who identified as LGBTQ+ and participated in the music industry of the 1990s were attracted to these divas' "vulnerability…mixed with defiance" (Brett & Wood, 2001). Bowie effectively set the stage for this vulnerability and rejection of societal norms during his performance of "Starman" on Top of the Pops—having recently come out as gay, performing a bisexual character on live television while embracing androgyny, and expressing affectionate gestures toward his same-sex band members, David Bowie was voluntarily subjecting himself to the ridicule of a public that was not ready to accept this boundary-breaking performance.

Interestingly, Sasha Geffen (2020) describes the octave leap that connects "Starman" and "Somewhere Over the Rainbow" as "flamboyant"(p. 34). There are a few reasons why this description is significant despite there being little reference to octave leaps as

"flamboyant" in music theory. Traditionally, Western music theory and voice leading regard an octave as an interval to be avoided. In their textbook, *The Musician's Guide to Theory and Analysis*, Jane Clendinning and Elizabeth Marvin (2021) assert that due to the hollow acoustic nature of the octave, it should be written carefully and sparsely in counterpoint exercises. Similarly, it is common in music theory classes to intensely discourage the use of leaps by an octave because of this hollow nature. In breaking these traditions of voice leading and part writing, Bowie is working to break musical boundaries and norms that stem from outdated composing practices, which in turn symbolizes his breaking of societal norms regarding gender expression and sexuality that are rooted in outdated, heteronormative, oppressive practices.

Another important song that illustrates David Bowie's connection between the Space Age and his push for acceptance of the LGBTQ+ community is his 1969 song "Space Oddity," inspired by Stanley Kubrick's *2001: A Space Odyssey* (Mcleod, 2003). The song tells the story of an astronaut whose spaceship experiences mechanical failures and is tragically lost to the abyss. Throughout the piece, Bowie enlists unusual compositional techniques combined with electronic noises to emulate the confusing, unknown feelings associated with the beginning of space exploration (Mcleod, 2003). The song also includes the use of a Stylophone—a toy instrument designed for children (Johnson, 2013). The combined use of unfamiliar sounds and toy instruments serves to emphasize how through space exploration, society was forced to revert to a childlike state of wonder and imagination in order to accept the unknown that is inherent in space exploration. This philosophy of being open to the unknown is then applied by Bowie to his ambiguous gender expression and sexuality—Bowie is forcing his listener to question the ethics and morality of their eager acceptance of the unknown as it applies to the Space Age, but their resistance towards the unknown that accompanies minority groups such as the LGBTQ+ community.

A theoretical analysis of "Space Oddity" provides further insight into Bowie's use of unusual compositional techniques to elicit a sense of floating uncertainty as it pertains to both the Space Age and the acceptance of the LGBTQ+ community. The piece is in C-major, but the instrumental introduction begins with alternating F-major-seventh and E-minor chords. The tonic C-major chord does not appear until the vocal part comes in, acting as Ground Control (table 1.1). This creates an association of the I chord with ideas pertaining to Earth and familiarity, while the prior oscillation between F-major-seven and E-minor is associated with the uncertainty and ambiguity of space. In measure thirty-one, Bowie begins singing as "Major Tom." Major Tom's introduction is accompanied by a C-major chord, followed by E-major and F-major. However, in the key of C-major, there is no E-major chord—it should be E-minor, and an E-major chord is not related to the key of C-major in any obvious way (table 1.2). The fact that this unusual chord is introduced along with Major Tom, who is in space, represents his literal transgression of societal norms—in a sense, he is no longer a part of any society, being physically so far removed from Earth, and therefore does not need to adhere to their standards. Similarly, Major Tom's entrance occurs along with the dropping out of vocal harmonies that were extensively built up during

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Ground Control's vocals, representing the loneliness and literal isolation that comes with space exploration, as well as those same emotions that are associated with living on the fringes of society, just as members of the LGBTQ+ community were forced to do. Later during the bridge, in measure 42, Major Tom sings "Planet Earth is blue, and there's nothing I can do," beginning on a B♭-major chord—the flat seven in C-major. In borrowing the lowered seventh from C-major's parallel minor, Bowie is completely erasing the key's leading tone which creates the musical tension that indicates the key that the song is in. Eradicating the leading tone effectively removes the sense of resolution to the tonic, or home, from the chord progression, again projecting an ambiguous sound that represents the parallels between the ambiguity of space exploration and gender expression and sexuality. This use of B♭-major also occurs during the bridge where the F-major-seventh to E-minor chord progression from the introduction is used again, furthering this sense of harmonic uncertainty (table 1.3).

Table 1.1

Measure number	1	2	3	4
Lyric	—	—	—	—
Chord	FM^7	e	FM^7	e

Measure number	5	6	7	8
Lyric	—	—	—	—
Chord	FM^7	e	FM^7	e

Measure number	9	10	11	12
Lyric	"Ground control to Major Tom"	—	"Ground control to Major Tom"	—
Chord	C	e	C	e

Measure number	13	14	15	16
Lyric	"Take your protein pills and-	Put your helmet on"	—	—
Chord	a a/G	D^7/F#	FM^7	e

Table 1.2

Measure number	31	32	33	34
Lyric	"This is Major Tom to ground control"	"I'm stepping through the-	door/and I'm-	Floating in the most peculiar-
Chord	C	E	F	F C

Table 1.3

Measure number	35	36	37	38
Lyric	Way/and the-	Stars look very different	Today/for-	Here, am I-
Chord	F	f C	F	FM^7

Measure number	39	40	41
Lyric	Sitting in a tin can"	"Far above the-	world"
Chord	e	FM^7	e

Measure number	41	43
Lyric	"Planet Earth is blue, and there's	Nothing I can do"
Chord	B♭ a	G F

David Bowie's background also gave him the key to appeal to a demographic that, if not for Bowie's influence, most likely would not have ever considered such "outrageous" ideas. Bowie came from a working class family in Brixton, London, and his parents only married after he was born. Bowie grew up in a rough neighborhood and frequently participated in physical altercations. In his study, *All the Young Dudes: Educational Capital, Masculinity and the Uses of Popular Music*, Andrew Branch (2012) asserts that Bowie's rejection of stereotypical notions of masculinity allowed the aspiring white male working class of England to do the same, helping them to subvert social class. Bowie's music also provided a private safe space for LGBTQ+ youth of the time who had nothing and no one else to turn to to validate their existence. Although David Bowie made conflicting claims as to his sexuality throughout his life, the fact is that by publicly exploring his sexual orientation, he helped normalize the common process of questioning one's sexuality. Similarly, Bowie's music served as a sanctuary for those who did not have access to "The public-private spaces of gay bars" that "Persistently function as: therapy for people who can't afford therapy; temples for people who lost their religion, or whose religion lost them; vacations for people who can't go on vacation; homes for folks without families; sanctuaries against aggression" (Gould, 2016, p. 133).

On January 10th, 2016, the fateful day on which the world lost David Bowie, there was an outpouring of love for him on social media, and countless people shared their experiences with his music helping them learn to accept who they were. Mary Gauthier, a Grammy-nominated musician and writer, tweeted that "David Bowie showed this queer kid from Baton Rouge that gender outlaws are cool. Androgyny=rock&roll, not a reason to kill myself" (Gauthier, 2016). Another Twitter user, Jacob, said that

"As a young little queer boy struggling to fit in #DavidBowie showed me that 'just fitting in' wasn't the only option. He was an inspiration"(Jacob, 2016). No matter what one believes about David Bowie's actual sexual orientation or what one thinks of his music, it is an indisputable fact that the claims he made, the outfits he wore, and the music he created were instrumental in helping LGBTQ+ youth of the time feel validated and accepted despite the harsh judgments passed on them by society. He thrust himself into the spotlight and subjected himself to harsh criticism of his personal, musical, and lifestyle choices for the sake of preserving freedom of expression. While his initial intention may not have been to become a representative for an entire demographic, his art and his image became the symbol for an entire movement. Over half a century later, even though we still are not perfect and members of the LGBTQ+ community are often subject to hate and violence, we have made immense progress socially and politically, all of which would not have been possible had these issues not been brought into the public eye by brave artists—namely, by the Starman, Ziggy Stardust, David Bowie.

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HPV Vaccine Hesitancy in the United States Among Black Americans and Christian Nationalists

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sponsored by Jennifer Katz, PhD

Abstract

Human papillomavirus (HPV) is the most common sexually transmitted infection among sexually active individuals. Those infected are at risk for developing cancer of the genitals, cervix, anus, or throat. While the vaccine is safe and effective, as of 2020 only 58.6% of adolescents in the United States were up to date on HPV vaccinations. Endorsing Christian nationalist values is one of the top predictors of vaccine hesitancy in the U.S. The HPV vaccine is especially contentious among Christian nationalists due to its relation to sexual health. The influence of purity culture has created a culture of fear regarding sex and a focus on preserving feminine honor. Mothers of adolescent girls in this group show a strong belief that the vaccine will promote promiscuity, despite several studies suggesting otherwise. Programs to increase vaccine uptake rates must consider this group and its beliefs to increase HPV vaccination coverage.

Vaccine hesitancy, defined by the World Health Organization (WHO) as a "delay in acceptance or refusal of vaccination despite availability of vaccination services," is a significant ongoing public health issue (Rosso et al., 2019, p. 1954). The WHO has named vaccine hesitancy as one of the top threats to global health (Hudson & Montelpare, 2021). While this is an international issue, this paper explores the unique cultural and historical factors that contribute to vaccine hesitancy in the United States. Recent research has shown that the two strongest predictors of vaccine hesitancy in the United States are being Black and holding Christian nationalist values (Whitehead & Perry, 2020). While there is some overlap between these groups, the reasons for their hesitancy are vastly different. For Black Americans, as well as other people of color, doubt about vaccines is often the result of discrimination faced in medical settings as well as intergenerational trauma stemming from centuries of unethical medical experimentation (Bazargan et al., 2021; Jamison et al., 2019). While Christian nationalist values also predict a lack of trust in science and institu-

tions, this is more due to religious moral concerns, as well as conspiracy theories and beliefs about individual liberty (Whitehead & Perry, 2020).

The Human Papillomavirus Vaccine

One vaccine that is often the subject of scrutiny is the human papillomavirus (HPV) immunization. HPV is the most common sexually transmitted infection among sexually active individuals. Those infected are at risk for developing cancer of the genitals, cervix, anus, or throat. Almost every sexually active person who does not receive the HPV vaccine will be infected at some point, putting them at risk for these cancers (Centers for Disease Control and Prevention [CDC], November 2021). Physicians recommend that the first dose of the vaccine be administered between the ages of 11 and 12, but it may be given as early as age nine. A second dose is then administered six months to a year after the first dose. Those who are vaccinated after the age of 15 require three doses. Possible side effects include injection site pain, nausea, headaches, or dizziness. Physicians agree that the potentially life saving benefits of the HPV vaccine outweigh any possible risks (CDC, July 2021). While the vaccine is safe and effective, as of 2020 only 54.5% of adolescents in the United States were up to date on HPV vaccinations (National Cancer Institute, 2022). As the HPV vaccine involves reproductive health, there are many reasons why it may be particularly contentious for the groups mentioned above. Black Americans, especially Black women, have been the targets of sterilization campaigns and gynecological experimentation, making a vaccine of this nature difficult to trust (Washington, 2008). Those who hold Christian nationalist values may have moral concerns, such as the belief that this vaccine may promote promiscuity (Birmingham et al., 2019). As the first dose of the HPV vaccine is ideally administered between the ages of 11 and 12, this decision whether or not to vaccinate is largely up to parents (CDC, November 2021). Depending on the parents' beliefs, they may decide that this vaccine may cause their child more harm than good, leading to unsatisfactory rates of HPV vaccination.

General Reasons for Vaccine Hesitancy

Vaccination programs have been a major protector of public health, eradicating dangerous diseases such as polio and smallpox (Olson et al., 2020). Despite the effectiveness of vaccines, a significant number of individuals in the United States have concerns over their safety (Salmon et al., 2015). These concerns are especially pronounced among parents. CDC survey data shows that more than a third of children between the ages of 19 and 35 months were not on track in terms of recommended vaccinations (Olson et al., 2020). A different survey revealed that a quarter of parents reported significant concerns over vaccinating their children (Olson et al., 2020). One recent consequence of vaccine hesitancy is the reemergence of poliovirus in the United States. While the polio vaccine brought an end to the virus in the U.S., in 2022 an unvaccinated individual had a case of polio with paralysis. This was a case of vaccine-derived polio, originating from the weakened form of the disease contained in the oral polio vaccine. While the weakened virus is typically harmless, in rare cases

it can circulate in unvaccinated communities and regain the strength to cause illness. (World Health Organization [WHO], 2022).

The topic of vaccination has become especially salient during recent years due to the COVID-19 pandemic. The introduction of the COVID vaccine was subject to great scrutiny across the country. Despite being approved by the Food and Drug Administration, many Americans are still suspicious of the potentially life-saving vaccine. As of March 2023, only 69.4% of the population has completed the primary vaccine series (CDC, 2023). While the focus on vaccine hesitancy has shifted from childhood vaccinations to the COVID-19 vaccine, policy changes are still needed to encourage parents to vaccinate their children.

Black Americans

While many factors contribute to vaccine hesitancy in the United States, a recent study found that identifying as Black was the strongest predictor of anti-vaccine attitudes (Whitehead & Perry, 2020). The ongoing discrimination and history of scientific racism has embedded a mistrust in medical institutions in much of the Black community. One prominent example of racism in medicine is the Tuskegee Syphilis Study, a longitudinal study wherein doctors examine the long term effects of untreated syphilis using poor, Black participants. When the study began, there was no known treatment for syphilis. However, when penicillin was found to treat the disease, researchers did not inform or treat participants, instead allowing the disease to progress (Washington, 2008). While Tuskegee is frequently brought up as an explanation for medical mistrust, the issue runs far deeper than just one horrific incident. Unethical medical "treatment" and experimentation on Blacks people dates back to the eighteenth century (Washington, 2008). Current American issues of systemic racism and anti-Black violence simply reinforce what centuries of abuse has taught the community. As previously mentioned, the HPV vaccine may be particularly troubling due to its relation to sexual health. A history of experimental gynecological surgeries, stereotypes of promiscuity, and forced sterilization gives Black Americans good reason to have doubts about medical institutions.

A History of Medical Racism

The ongoing pattern of medical racism in America dates back the emergence of the slave trade in the seventeenth century. As the economy of the American South became increasingly reliant on the labor of enslaved people, evidence of medical neglect, experimentation, and abuse emerged. Early narratives from American physicians tasked with treating enslaved individuals repeatedly described them as mistrustful and noncompliant, an issue that is still evident in healthcare today (Washington, 2008). Other stereotypes, such as Black people having greater immunity to pain also lived on for centuries. One study found that nearly half of a sample of medical students and residents believed at least one false statement regarding the biological differences between white and Black patients. These statements included items such as "Blacks'

nerve endings are less sensitive than whites'" and "'Blacks' skin is thicker than whites'" (Hoffman et al., 2016, p. 4298). Many enslaved people were accused of malingering, leading to the regular "prescription" of whipping. Those who were deemed ill received minimal or experimental care.

Medical experiments performed on enslaved people were common as they could not object to the often painful and dangerous procedures. Dr. J. Marion Sims, who is hailed as the "father of gynecology," perfected many treatments by operating on enslaved women without anesthesia. Similarly, Dr. François Marie Prévost honed the cesarean section by operating on enslaved women who could not refuse this "care." Several other doctors carried out these types of procedures, many of which failed. When they were successful, the white population could benefit from the knowledge that was gained at the expense of Black women (Washington, 2008). As the medical field evolved in the United States, African Americans still bore the brunt of experimental medical testing and medical education. To train physicians in anatomy, grave robbers often illegally obtained bodies for dissection. Poor, Black Americans were the primary victims of this grave robbery. The corpses of African Americans were considered "clinical material" for doctors in training (Washington, 2008, p. 105). Black Americans were eventually allowed to seek treatment in charity wards, but they were frequently expected to turn themselves over to medical researchers as compensation for the care they received. The treatments they received were also commonly part of training new physicians. This reinforced the dehumanization of Black people in the medical field and in the nation at large.

Eugenics was a pseudoscientific movement that furthered the dehumanization of Black Americans. The eugenics movement suggested that by choosing parents with desirable genetic traits, future generations could be born healthier and physically superior. These "desirable" traits included health, intelligence, wealth, and whiteness. The term "racial hygiene" became ubiquitous among eugenicists. This seemingly scientific ideology provided the basis for the continuity of medical racism in the area of reproduction (Washington, 2008). Margaret Sanger, an activist often hailed as a pioneer of women's rights, contributed to the efforts to decrease the birth rates of Black Americans. She pushed for widely available birth control among people of color, which aided her in creating "family planning centers" in Black communities. Sanger and other eugenicists demonized Black women, especially mothers, portraying them as hypersexual and incompetent. These racist portrayals played into Black women being highly overrepresented among sterilized women in the U.S. In 1983, African Americans made up only 12% of the U.S. population but 43% of women sterilized as a part of federally funded programs were Black (Washington, 2008). Many Black women were sterilized against their will while they were under anesthesia for medical procedures, leading this involuntary sterilization to be nicknamed the "Mississippi appendectomy." With the history of Black women's reproductive health so fraught with medical racism, it is completely logical that Black women today would hesitate to trust the HPV vaccine.

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These attempts at decreasing Black birth rates have not stopped but simply evolved. Beginning in the 1990s, thousands of Black women were pressured into accepting the contraceptive implant Norplant (Roberts, 1997). Norplant consists of six silicone capsules that are implanted in the arm and gradually release a form of hormonal birth control. The advantages of this form of contraception is that there is no need to remember to take a pill and it can prevent pregnancy for up to five years. However, policymakers quickly came to see it as a means to control the birth rates of those who relied on welfare and the "inner-city poor" (Roberts, 1997). Welfare and race are closely linked in the American consciousness, so when policymakers discussed those on welfare, the implication was that they meant Black Americans. There were monetary incentives for low income women and teenagers to get Norplant, but many wanted to stop its usage due to side effects. However, many found that they could not afford removal or that they could not find a doctor trained in removal. This led many Black Americans to see Norplant as a racist attempt to forcefully curb Black birth rates, with some even comparing it to an attempted genocide (Roberts, 1997).

Long–Term Impacts of Medical Racism

The legacy of scientific racism impacts patient outcomes to this day. Patients' distrust of medical providers and healthcare institutions can decrease their commitment to treatment plans, which can negatively affect patient outcomes. A 2021 study explored this issue using data pulled from The Survey of California Adults on Serious Illness and End-of-Life. The total sample used 2,328 adults. 35% identified as non-Hispanic White, 28% as non-Hispanic Black, and 27% as hispanic (Bazargan et al., 2021). Researchers collected information on demographics and socioeconomic characteristics such as age, sex, education, and household income. Participants were also asked to rate their health on a scale from poor to excellent. They were then asked if they had a primary care provider. Researchers measure perceived healthcare provider discrimination using a ten item questionnaire. Questions were pulled from other instruments relating to perceived discrimination and included items such as "Have you ever felt judged or treated differently by a health care provider because of your income?" (Bazargan et al., 2021). Medical mistrust was measured by asking participants "In general, how much do you trust your health care providers to act in your best interest?" Participants rated their agreement on a scale from one to three.

Analysis of the data showed that racial background was significantly associated with medical mistrust, with Black and Hispanic participants having 73% higher odds of reporting mistrust. Perceived discrimination from healthcare providers was also correlated with greater medical mistrust. Discrimination due to race increased the odds of medical mistrust by 25%. There was a similar effect for discrimination based on income and insurance, or the lack thereof. The results of this study indicate a need to address discrimination in healthcare and the biases that healthcare providers may hold in order to increase institutional trust. Increasing trust would increase the likelihood of patients staying committed to their treatment plans and trusting physician recommendations, therefore increasing vaccination rates.

Being a racial minority is also associated with lower institutional trust, another factor that plays into vaccine uptake. A 2014 study hypothesized that there would be significant differences in institutional trust between racial groups even after controlling for demographics, access, healthcare utilization, and previous healthcare experiences (Schwei et al., 2014). Trust was defined as the patient's belief that those caring for them have their best interests in mind. It is related to patients' willingness to enter healthcare institutions and to engage with providers. Lower levels of trust can lead to individuals switching physicians more frequently, reduced reliance on doctors' judgment, and decreased satisfaction with care overall. Higher trust can improve perceived mental and physical health, decrease emergency room visits, and increase vaccine uptake (Schwei et al., 2014).

To investigate the relationship between race and institutional trust, Schwei and colleagues conducted a cross-sectional survey of adults shopping at 12 different Chicago supermarkets in diverse neighborhoods. A total of 596 participants were recruited, made up of equal proportions of African Americans, Mexican-Hispanics, and whites. Participants completed a questionnaire consisting of 235 items regarding demographics, healthcare access, healthcare usage, perceived discrimination, interpersonal trust, institutional trust, and previous negative experiences with healthcare. Researchers measured institutional trust using the Health-Related Trust Measure (HTM), a cross-cultural measure containing questions related to discrimination in healthcare, equity, hidden agendas, insurance, negative perceptions of physicians, and positive perceptions of physicians, rated from never true to always true (Schwei et al., 2014). Analysis revealed that being white and older was significantly associated with higher levels of institutional trust. As other studies found, having a previous negative experience with healthcare was associated with lower trust (Bazargan et al., 2021). The main hypothesis was supported by the results, with institutional trust being significantly lower in minority groups than in whites. This difference in trust is likely a contributing factor in healthcare disparities among racial groups (Schwei et al., 2014). If an individual does not believe that their provider has their best interests in mind, they will be less inclined to follow their medical advice. Specifically, they may not trust vaccine recommendations, leading to lower vaccine uptake among minority groups, especially Black Americans.

Institutional Trust Among Black Americans

Marlow and colleagues delved into the relationship between institutional trust and parents' acceptance of the HPV vaccine for their children. The study's participants were 684 mothers with at least one daughter aged 8 to 14. This age range reflects those most likely to be recommended for the HPV vaccine (Marlow et al., 2007)). Participants were recruited from 10 schools in different parts of England. Rural, suburban, and inner-city schools were all included in the study to ensure a diverse sample. The mothers filled out several questionnaires which had been previously developed for other studies. These scales measured the mothers' views on the importance of vaccinations, general trust in doctors and government, trust in their own doctor, general

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vaccine concerns, and previous experience of vaccinating children. The scale regarding general trust in doctors and the government reflects institutional trust. After filling out the questionnaires, the mothers then read a brief write-up of information about HPV, including details about its link to certain cancers and information about the HPV vaccine. Finally, participants were asked to rate their agreement with the statement "If your daughter were invited to have the HPV vaccination, would you agree to her having it sometime soon?" (Marlow et al., 2007). Analysis of the data revealed that respondents with greater trust in doctors and the government were more likely to state that they would accept HPV vaccination for their daughter. The results of this study suggest that institutional trust is a key factor in parents' decision whether or not to have their child vaccinated for HPV. If Black Americans have less institutional trust, this would explain some of their reasoning for vaccine hesitancy (Schwei et al., 2014).

Christian Nationalism

The 2020 American Religious Landscape Survey revealed that 70% of Americans identify as Christians (PRRI, 2021). According to Whitehead and Perry, the majority of this group embraces Christian nationalist beliefs to some extent (Whitehead & Perry, 2020). Christian nationalist ideology merges the Christian and American identity, meaning that being a Christian is a requirement of being a good American. Its supporters assert that Christianity should be promoted and protected by the state (Christians Against Christian Nationalism, n.d.). Christian nationalist ideologies are most prevalent among White Evangelical Protestants, 81% of whom agree that the United States should be a Christian nation (Smith et al., 2022).

Christian nationalism is deeply intertwined with American identity, making it a unique factor in the reasons behind vaccine hesitancy in the United States. Adherence to this ideology is one of the strongest predictors of general anti-vaccine attitudes (Whitehead & Perry, 2020). Religion is a significant determinant in individuals' trust in medical interventions such as vaccines. Thirty-nine percent of Americans agree with the statement "Whenever science and religion conflict, religion is always right." This percentage is especially startling when compared to those of other nations: only 13% of Australians, 7% of Swedes and 5% of the Dutch agree with the same statement (Baker et al., 2020). Americans are also much more likely to embrace creationism and reject evolution compared to other nationalities (Baker et al., 2020). This skepticism can result in mistrust of physicians who recommend the vaccines and the pharmacological companies that produce them. Additionally, Christian nationalists have recently embraced Donald Trump's anti-vaccine rhetoric. This group prioritizes individual liberty over protecting the vulnerable. Parents in this group also believe in their ultimate authority over the decision whether or not to vaccinate their children (Whitehead & Perry, 2020).

One concern many Christian nationalists have regarding the HPV vaccine in particular is the belief that a vaccine relating to sexual health would lead to adolescent promiscuity. This is especially prevalent among the parents of daughters. A significant

element in many American Christian communities is purity culture. From a young age, youth are told that sexual activity is reserved exclusively for those in a heterosexual marriage. Sexual purity is portrayed as a precious gift to be protected and saved for one's future spouse. Those who do not protect their purity are subject to extreme shaming. They are viewed as soiled and tainted (Gish, 2018). To encourage sexual purity, Christian communities host purity balls, give out purity rings, and have teens sign purity pledges where they vow to abstain from premarital sex. While both boys and girls are fed this message, the standards of purity are especially strict for young women. The ideals of purity culture are heavily based on the ideals of white femininity (Gish, 2018).

This rhetoric also amplifies the harm of premarital sexual activity, both physical and emotional. Teens are warned of the emotional damage of casual sex through personal stories of those who regretted their sexual activity. Stories of unplanned pregnancies and sexually transmitted infections are used as scare tactics. Some communities even portray their purity teachings as public health campaigns. However, there is no conclusive evidence that sexual purity teachings have any significant impact on teen pregnancy or STI rates (Gish, 2018).

Purity Culture & The HPV Vaccine

Despite the medical importance of the HPV vaccine, many religious parents hesitate to vaccinate their children for reasons relating to purity culture. Some believe that having their adolescents vaccinated will encourage them to engage in sexual activity. Foster and colleagues (2021) investigated this belief by examining the beliefs of 258 women aged 30–45. Seventy-two percent of this sample had at least one child. While both parents can hold purity beliefs, previous research has shown mothers to be highly involved in decision making related to their children's health. The study focused on the idea of feminine honor, or the belief that women must be modest and chaste. For this reason, only mothers of daughters were asked questions regarding their decision whether or not to vaccinate. Researchers hypothesized that endorsement of feminine honor would be associated with mothers' decreased support for vaccinating their daughters for HPV and that the effect would be mediated by the belief that the HPV vaccine would promote promiscuity.

To evaluate the hypothesis, researchers had participants fill out several questionnaires to evaluate their attitudes. The Honor Ideology for Womanhood Scale (HIW) measures the extent to which participants endorse the idea of feminine honor. They rated their agreement on a scale from one to seven with statements such as "A respectable woman never wants to be known as sexually permissive" (Foster et al., 2021, p. 219). Mothers then responded to the Vaccination Rejection for Daughters-Mothers Scale (VRD-Mothers). This scale evaluated their attitudes towards vaccinating their daughter(s) for HPV. Finally, the Sexual promiscuity Message Scale (SPM) revealed the extent to which mothers believed that having their daughter(s) vaccinated for HPV would send the message that having sex with multiple partners is permissi-

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ble. The scale conceptualizes the idea that the HPV vaccine promotes promiscuity (Foster et al., 2021). Analysis of the data revealed that feminine honor endorsement significantly predicted HPV vaccination support. Those who scored higher on the Honor Ideology for Womanhood Scale were less likely to support vaccinating their daughter(s). This relationship was mediated by the belief that the vaccine would promote promiscuity. The feminine honor belief measured in this study reflects the expectations purity culture holds for young women. The results of this research show that purity culture can have a significant impact on the decision whether or not to vaccinate girls for HPV.

The HPV Vaccine and Sexual Activity

Despite the strong belief in a connection between the HPV vaccine and promiscuity, recent research has been inconsistent with this belief. In 2015, Smith and colleagues investigated the connection between publicly funded HPV vaccination programs in Canada and signs of sexual activity in adolescent girls. As in the United States, some parents believe that the vaccine will give adolescents a false sense of security against the risks associated with sexual activity. The sample was a population based cohort of all girls eligible for Ontario's grade eight vaccination program in the first two years it was offered. Of the total sample of 260,493 girls, 49.4% were eligible for publicly funded vaccination while the rest were not (Smith et al., 2015). Researchers collected data on indicators of sexual activity such as pregnancy and sexually transmitted infections other than HPV. The estimated risk difference (RD) and relative risk (RR) attributable to vaccination were then calculated based on the data collected. Results showed no statistically significant increase in risk of indicators of sexual activity related to vaccination. There was also no evidence that publicly funded HPV vaccination programs had any impact on clinical indicators of sexual activity (Smith et al., 2015).

A similar study was conducted in the United States to evaluate the impact of state-mandated programs to increase HPV vaccine uptake on adolescent sexual behavior. Multiple states have passed legislation relating to HPV vaccination such as requiring schools to educate students about the vaccine, subsidizing vaccine costs and incentivizing insurance companies to cover the vaccine, and mandating HPV vaccination. Cook and colleagues (2018) collected information on adolescent sexual activity Youth Risk Behavior Surveillance System (YRBSS). They focused on information from students in 25 states without HPV legislation and those from 16 states with HPV legislation. The specific questions included asking students whether they had engaged in sexual intercourse in the past three months and if they had, whether they had used a condom. Researchers also inquired about the number of sexual partners participants had. They compared data on sexual behavior from before and after HPV legislation and compared it to the change in states with no legislation. Results showed that there was no difference in sexual behaviors between states with and without legislation relating to HPV vaccine uptake. These findings reinforce the results of Smith and colleagues' 2015 Canadian study. They also indicated that the connection between the HPV vaccine and sexual behavior is not as serious as many parents believe. Despite

these findings, this parental belief persists, indicating that Christian nationalist parents are a vital population to focus on when educating people on the HPV vaccine.

Another aspect of the HPV vaccine that Christian nationalists take issue with is its status as a medical intervention relating to sexual health. Many evangelical Christians in particular see God as the "Great Physician" and the "Birth Controller" (Joyce, 2009, p. 134). The idea of a person, especially a woman, attempting to exert control over their sexual and reproductive health is a direct insult to God's divine plan. Many conservative Protestant writers argue that a woman's body is not her own. This has resulted in members of such communities rejecting certain aspects of modern medicine, especially birth control and vaccines. Members of some conservative Christian communities equate hormonal birth control with abortion, which is viewed as a grievous sin in these communities. The HPV vaccine may also be seen as "spiritually unsafe," making parents extremely hesitant to approve of the vaccination (Joyce, 2009). Addressing the concerns of this community will require patience and culturally sensitive interventions.

Research has suggested that another element of vaccine hesitancy among Christian Nationalists is the lack of knowledge regarding the vaccine and what it protects against. Birmingham and colleagues investigated this by comparing responses from young adults from two colleges, one Christian university and one non-religious university. They predicted that stronger religious commitment would be associated with lower knowledge and greater misperceptions relating to HPV and the HPV vaccine. This knowledge gap along with any misperceptions would be connected to lower adherence to HPV vaccination recommendations. Participants completed an online survey addressing HPV and HPV vaccine knowledge and adherence. Religious attitudes were assessed using the Religious Commitment Inventory-10. Results showed that high religious commitment was significantly associated with lower knowledge of the disease and its vaccine, as well as its contributions to cancer and the prevalence of the disease among men and women. Additionally, if these individuals believe that abstinence will protect them from the risks of STIs, they have no reason to seek out information on these risks and how to prevent them. These findings indicate that this knowledge gap must be addressed in order to increase HPV vaccination uptake among those who endorse Christian nationalist values. The effects of purity culture are also evident, with the focus on absolute purity causing young adults to ignore information related to sexual safety.

Addressing Vaccine Hesitancy

One promising method for addressing vaccine hesitancy is motivational interviewing. This counseling technique aims to help an individual find their own motivation to change rather than telling them to change. It is an empirically developed method that was initially developed to address alcoholism (Reno et al., 2018). The main principles of motivational interviewing are asking open ended questions, engaging in reflective listening, affirming the person's desire and ability to change, and summarizing. Asking

open ended questions allows an individual to reflect on their own beliefs and come to their own conclusions instead of feeling limited by the interviewer. This could mean asking a parent why they feel that the HPV vaccine could be harmful or what they believe the consequences may be. This helps make the person feel like their opinions are important. Reflective listening shows that the interviewer cares about the interviewees perspective, which can make the interviewee less defensive. It is also a deviation from the typical lecturing regarding vaccinations, which is not typically successful. Affirming the person's desire and ability to change helps the interviewee feel more competent in making the decision. It also minimizes the pressure on them that might be present in a more typical persuasive conversation. Finally, summarizing helps the interviewee put everything together. It shows them how their choice could impact them and how to carry out their decision (Grant, 2021).

While motivational interviewing is a relatively novel technique, it has already resulted in some success in addressing vaccine hesitancy. One study investigated the effectiveness of using motivational interviewing as a tool for discussing the HPV vaccine with vaccine hesitant parents. The study used a sample of eight health clinics in Colorado that all served at least 500 adolescent patients and offered the HPV vaccine in the clinic (Reno et al., 2018). Researchers worked with the Motivational Interviewing Network of Trainers to develop a motivational interviewing approach specifically for addressing the HPV vaccine. Clinic providers were then trained in this approach. During the course of the study, providers filled out surveys and participated in focus groups to indicate whether they used the motivational interviewing techniques, how useful the techniques were, and their perceived self-efficacy when discussing the vaccine with parents.

Analysis of surveys and feedback groups indicated that the motivational interviewing techniques were deemed useful or very useful for addressing parental HPV vaccine ambivalence by 88% of providers (Reno et al., 2018). A significant percentage of providers increased their ratings of self efficacy regarding discussing vaccines after learning these techniques. Focus group discussions revealed that all providers intended to continue using motivational interviewing techniques when discussing the HPV vaccine. While these results are promising, several providers stated that there was not always time to use MI and that the techniques were more difficult to utilize when working with new patients (Reno et al., 2018). Implementing motivational interviewing on a large scale will require a significant amount of money and time. Funding to support training programs in hospitals and medical schools could be an important first step to creating a generation of medical professionals who are more effective when suggesting childhood vaccinations. This technique could be very effective for addressing HPV vaccine hesitancy in both Black Americans and Christian nationalists.

As much of the vaccine hesitancy among Black Americans involves systemic discrimination and dehumanization, increasing uptake will require systemic change. One necessary step is to address discrimination and bias in healthcare. Doing so could improve institutional trust and increase vaccine uptake. A study carried out by the

National Academy of Medicine concluded that discrimination and unsatisfactory care in medical settings is largely due to implicit racial bias (Williams & Cooper, 2019). Data from a large volunteer sample indicated that approximately 70% of doctors had an implicit preference for whites patients over Black patients. This prejudice can manifest in more biased patient treatment, including less patient-centered dialogue and lower patient perceptions of respect from providers. One group of researchers utilized techniques rooted in social-cognition to create an intervention to combat implicit bias in healthcare workers. This intervention framework aimed to increase internal motivation to fight bias, improve providers' understanding of the psychological mechanisms of bias, enhance providers' confidence in their ability to interact with dissimilar patients, increase perspective taking, and improve the ability to build partnerships with patients (Burgess et al., 2007). The researchers conclude that such a framework could be integrated into provider training in order to address some of the racial inequities in healthcare. Like motivational interviewing, such an intervention will require time and funding to be implemented. It could be developed into an online or in-person training course that could be required during schooling or through individual healthcare providers. Addressing implicit bias in providers has the potential to decrease discrimination and increase institutional trust, two major steps towards increasing HPV vaccine uptake among Black Americans.

Another pathway to reducing racial inequities in healthcare is to diversify healthcare workers themselves. Having staff that reflects the racial diversity of the community they serve can greatly improve patient care outcomes. Research has shown that when patients have a provider of the same race, communication is improved and patient adherence to physician recommendations increases (Williams & Cooper, 2019). Institutional support is necessary to increase people of color in the medical field. This can include funding for scholarships and loan repayment programs for low income students as well as institutional resources to support diversity. Patients of color may be more inclined to trust someone with the same background as them, making them more likely to accept the provider's vaccination recommendations.

Conclusion

The hesitancy and apprehension surrounding administration of the HPV vaccine poses an immense risk to public health in the United States. While different communities—most notably the Christian nationalists and groups of Black Americans—have different rationales for their denial of the vaccine, all hesitancies create a problem within the sphere of national health. Vaccine hesitancy within these groups is more than just a distrust of vaccines and medical technology; it is a manifestation of a lack of institutional trust, lack of knowledge, and an amalgamation of deeply-held cultural beliefs. To combat this hesitancy and positively affect national health as a whole, increased education on the importance and evidence behind HPV vaccines is necessary. Though specific rationales behind vaccine hesitancy vary by community, motivational interviewing is a promising technique for addressing this problem in both Christian nationalists and Black Americans. It has the potential to improve pro-

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vider efficacy when recommending vaccines. Addressing structural inequalities in the American healthcare system is another important step that is necessary for improving institutional trust in Black Americans. Through addressing these hesitancies in all communities, increased HPV vaccine administration will aid in decreasing national STI and cancer rates, and will provide an overall health benefit.

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A General Mortality Analysis in 19th and Early 20th Century Rochester, New York: "Exploring Sex-Based Differences in Childhood and Adolescence Mortality Rates Across Age Groups"

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sponsored by Kristi Krumrine, PhD

Abstract

This paper represents the initial phase of a research study that explores health and disease in 19th- and early 20th-century Rochester. The research focuses on the prevalence of historic diseases through the transcription and analysis of cemetery records for Mount Hope Cemetery. The purpose of this study is to compare mortality rates in childhood and adolescence across different age groups of males and females. The study investigates the average ages at death, as well as potential factors that may have contributed to mortality rates in these age groups. The study also seeks to identify the variety of factors (social, economic, behavioral, and environmental) that may have contributed to these diseases, as well as possible health disparities. Data from various sources, including vital statistics records, census data, and other health-related surveys, are used in the analysis. Overall, the main goal of this paper is to emphasize the importance of understanding the factors that contribute to childhood and adolescent mortality rates, as well as the need to address the underlying causes of these disparities.

"Child and adolescent mortality is [and has been] an everyday tragedy of enormous scale that rarely makes the headlines" ~ Max Roser

Childhood and adolescent mortality is a crucial measure of population health, reflecting the underlying factors that influence the health status of communities. These factors include economic development, living conditions, social well-being, illness rates, healthcare quality and access, public health practices, and environmental quality. Health historians, including Virginia Berridge and Dorothy Porter, have emphasized the need to consider population health in different time periods as an essential phenomenon, which will aid in better understanding past mortality rates (Scally & Womack, 2004). Porter has also highlighted the importance of considering the social, political, and economic factors influencing population health, including public health policies, medical technologies, and environmental changes (Scally & Womack, 2004). In the early years of Rochester, New York, the city proliferated, but poor living conditions, unsanitary environments, and disease outbreaks persisted. Rochester lacked essential public health infrastructure, including public sewers, waste disposal facilities, safe drinking water and food regulations, and medical knowledge, contributing to high mortality rates (McKelvey, 1956). Child and adolescent mortality were particularly prevalent during the 19th and 20th centuries, reflecting the city's poor health and living conditions, as complaints showcased that "the whole central portion of the city is filled with a stench" (McKelvey, 1956, p.10). Due to the unfavorable living conditions in the Rochester area, various factors caused many deaths in the community, with infectious diseases being the leading cause.

Notably, examining sex-based differences in mortality rates, it remains a consistent observation that women generally live longer than men. Despite research consistently showing fluctuations in the U.S. sex gap in mortality over time, much of the literature has overlooked essential covariates. Limited research has explored whether variations in mortality between sexes arise from distinct distributions of illnesses. Both sexes have witnessed significant, albeit uneven, increases in life expectancy at birth over the past century (Rogers et al., 2010). Between 1900 and 2005, male U.S. life expectancy rose from 46.3 to 75.2 years, and female life expectancy rose from 48.3 to 80.4 years (Rogers et al., 2010). From 1920, when the sex gap in life expectancy at birth was just 1.0 year, the sex gap slowly increased to a peak of 7.8 years in 1975 and again in 1979 (Rogers et al., 2010). Thus, the proliferation of articles published in the mid-1980s— on the heels of this peak—should come as no surprise (Rogers et al., 2010). Since 1979, the U.S. sex gap in life expectancy at birth has steadily declined to 5.2 years in 2005, the lowest level in nearly 60 years (Rogers et al., 2010). Therefore, persistence of the sex gap in mortality, even at the reduced level, along with the possibility of further narrowing and additional improvements in mortality for both genders, justifies the need for further research.

This paper aims to investigate the sex-based differences in childhood and adolescent mortality rates across different age groups during the 19th and early 20th centuries in Rochester, New York. Understanding the distribution of mortality across age groups can provide insight into infant mortality's underlying causes and determinants. For example, factors contributing to early infant mortality, such as inadequate prenatal care, poor maternal nutrition, and lack of access to quality obstetric care, may differ

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from those affecting later infant mortality, such as infectious diseases and accidents. The importance of this research is underscored by the work of Ram and Ram (2014), who highlight the significance of mortality among childhood and adolescence rates as a sensitive measure of overall population health. Their study notes that mortality rates can help to identify the underlying factors that contribute to poor health outcomes, including social inequalities, poor living conditions, and inadequate healthcare access; because, as McKelvey (1956) states, with more people surviving childhood and youth, the percentage of deaths caused by chronic diseases like heart failure, cancer, and arthritis has increased. Therefore, knowledge about the mortality rates in childhood and adolescent years, the causes of these diseases, and improved public health knowledge are essential for the aging population.

Research Objectives

- To investigate historical mortality rates among males and females during childhood and adolescence across various age groups in Rochester, NY, using data from cemetery records at Mount Hope Cemetery.

- To compare the average ages at death between males and females in childhood and adolescence.

- To identify potential factors that may have contributed to mortality rates in childhood and adolescence.

- To provide insights into the mortality rates of males and females during childhood and adolescence and to identify factors contributing to these rates.

By achieving these research objectives, the study can provide valuable insights into the historical mortality rates of children and adolescents in Rochester, NY. In addition, it can contribute valuable insights to shape public health policies and interventions with the goal of decreasing mortality rates and enhancing the health outcomes especially for children and adolescents.

Methodology

The present study utilized a rigorous and systematic methodology to obtain and analyze data on historical mortality rates among males and females during childhood and adolescence in Rochester, NY. The study relied on primary source materials, specifically death records from the highly regarded Mount Hope Cemetery, sourced from the University of Rochester Rare Books, Special Collections, and Preservation (RB-SCP) library. The use of primary source materials is a critical aspect of conducting historical research, as it allows for the examination of data contemporaneously with the time period being studied, thus increasing the reliability and accuracy of the findings.

The death records were transcribed and carefully examined to gather information on each individual, including their name, date of internment, age, cause of death, and place of residence. The study period was limited to 1835 and 1935 in order to focus

exclusively on research objectives. The selected time frame encompasses significant development and growth in Rochester, NY. It thus provides a comprehensive overview of mortality rates during a critical period of the city's history (Centers for Disease Control and Prevention [CDC], 2023).

The dataset included 15,719 individuals, with 3,070 identified as children and adolescents. Records were filtered to include individuals that met the specified age range criteria. To enhance the clarity of this research paper, I created tables and charts using the data from Google Sheets, a widely used and reliable tool for data analysis. Findings were obtained by thoroughly examining the population data, including calculating mortality rates and identifying trends and patterns across age groups.

Results

This section presents key findings from the analysis, focusing on the differences in mortality rates between males and females and the factors that may have contributed to these differences. It also discusses the potential implications of these findings for public health policies and interventions aimed at reducing mortality rates and improving the health outcomes of children and adolescents.
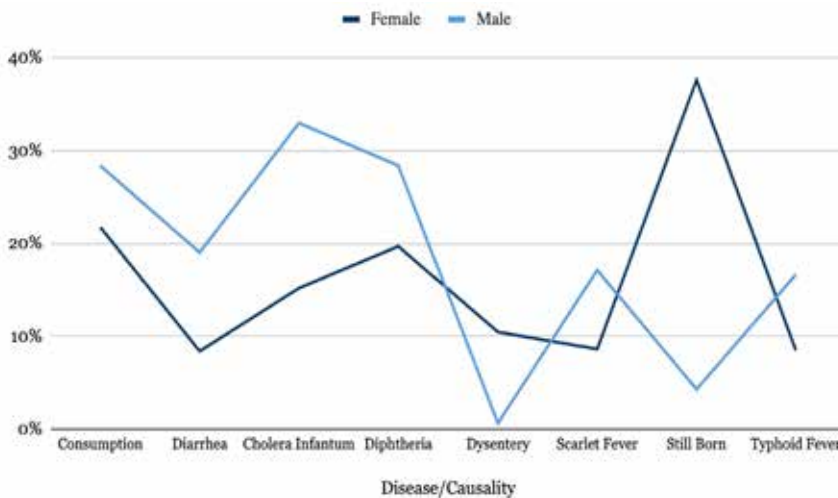
Figure 1: The mortality rate and causes of death in children and adolescents by gender from 1835–1899 (in %)

Figure 1 highlights the mortality rate and causes of death in children and adolescents for the years 1835–1899. The y-axis shows the mortality rates in percentage, while the x-axis shows the cause of death. Upon analyzing the graph, it is evident that there is a considerable disparity by sex in mortality rates.

Consumption: Figure 1 showcases that the mortality rate from consumption for females is 22% and 28% for males.

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Diarrhea: Figure 1 showcases that the mortality rate from diarrhea for females is 8% and 19% for males.

Cholera Infantum: Figure 1 showcases that the mortality rate from cholera infantum for females is 15% and 33% for males.

Diphtheria: Figure 1 showcases that the mortality rate from diphtheria for females is 20% and 28% for males.

Dysentery: Figure 1 showcases that the mortality rate from dysentery for females is 10% and 1% for males.

Scarlet Fever: Figure 1 showcases that the mortality rate from scarlet fever for females is 9% and 17% for males.

Still Born: Figure 1 showcases that the mortality rate from stillbirth for females is 38% and 4% for males.

Typhoid Fever: Figure 1 showcases that the mortality rate from typhoid fever for females is 8% and 17% for males.
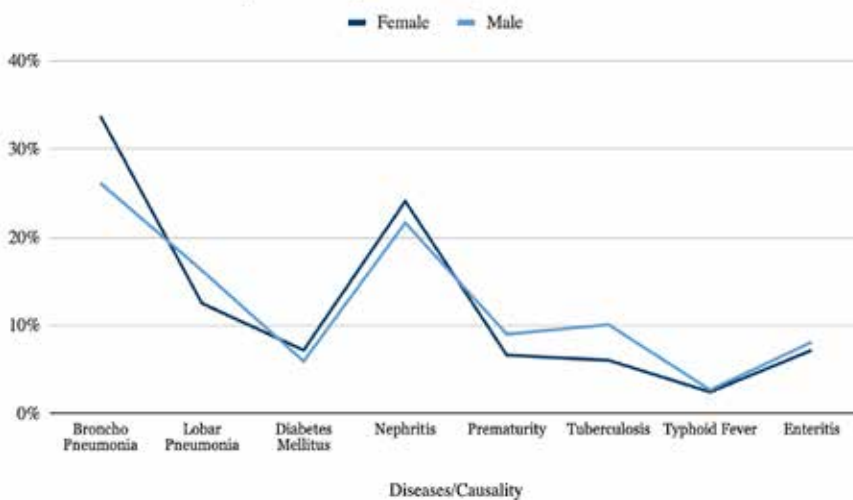
Figure 2: The mortality rate and causes of death in children and adolescents by gender from 1900–1935 (in %)

The graph chart Figure 2 highlights the mortality rate and causes of death in children and adolescents from 1900–1935. The y-axis shows the mortality rates in percentage, while the x-axis shows the cause of death. Upon analyzing the graph, it is evident that there has been a steady, equal rate of mortality between males and females, compared to Figure 1. A shift in the causes of death in 1835–1899 can also be seen in this graph.

Bronchopneumonia: Figure 2 showcases that the mortality rate from bronchopneumonia for females is 34% and 26% for males.

Lobar Pneumonia: Figure 2 showcases that the mortality rate from lobar pneumonia for females is 13% and 16% for males.

Diabetes Mellitus: Figure 2 showcases that the mortality rate from diabetes mellitus for females is 7% and 6% for males.

Nephritis: Figure 2 shows that the mortality rate from nephritis for females is 24% and 22% for males.

Prematurity: Figure 2 showcases that the mortality rate from prematurity for females is 7% and 9% for males.

Tuberculosis (TB): Formerly known as consumption in the 19th century. Figure 2 showcases that the mortality rate from tuberculosis for females is 6% and 10% for males.

Typhoid Fever: Figure 2 showcases that the mortality rate from typhoid fever for females is 2% and 3% for males.

Enteritis: Figure 2 showcases that the mortality rate from enteritis for females is 7% and 8% for males.

Diseases/Causality	0–5 Years		6–10 Years		11–15 Years		16–20 Years	
Total n of females/ males	F (n=983)	M (n=855)	F (n=204)	M (n=218)	F (n=130)	M (n=109)	F (n=263)	M (n=199)
Cholera infantum	9%	12%	2%	16%	16%	15%	0%	1%
Consumption (Tuberculosis)	10%	9%	7%	**34%**	**34%**	28%	**72%**	**47%**
Diphtheria/Croup	**21%**	22%	19%	28%	28%	**30%**	3%	1%
Diarrhea	11%	11%	**23%**	0%	0%	0%	0%	0%
Dysentery	10%	12%	2%	4%	4%	9%	3%	3%
Nephritis	1%	2%	5%	0%	0%	0%	0%	0%
Scarlet Fever	19%	**23%**	22%	12%	12%	6%	3%	9%
Typhoid Fever	3%	2%	11%	3%	3%	11%	18%	34%
Still Born	7%	0%	0%	0%	0%	0%	0%	0%
Bronch Pneumonia/ Bronchitis	6%	4%	5%	3%	3%	2%	2%	4%
Enteritis	2%	3%	0%	0%	0%	0%	0%	0%
Lobar pneumonia	2%	1%	4%	0%	0%	0%	0%	0%

Table 1: The mortality rate and causes of death among males and females across four age groups (in %)

An analysis of mortality patterns in children and adolescents reveals that numerous causes of death exist within this population. However, the presented data in Table 1 emphasizes that diseases and other causal factors are the most dominant contributors

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to mortality during this time. Meanwhile, Table 1 illustrates age-stratified mortality rates across different causes of death, which reveal that boys experience a higher mortality rate than girls across most age groups and causes of death. This finding is consistent with prior research and may reflect a complex interplay between biological and social factors.

The figures in bold within Table 1 denote the highest rates of mortality observed for the top causal diseases. These findings underscore the critical need to prioritize targeted interventions to prevent as well as manage the leading causes of death in children and adolescents.

Discussion

This study found that the leading cause of death in 1835–1899 was stillbirth, with a significant disparity between males and females. This major finding was fascinating, and a surprising factor was that stillborn baby girls are more likely to be named than baby boys, and stillborn girl infants were more likely to have their sex recorded than boy infants. According to Lin et al. (2007), these findings may represent the better capability of female fetuses to survive beyond the first half of pregnancy in the presence of a given insult, as reflected by the higher rate of first and early second-trimester abortions among male fetuses. However, this is only an assumption, as it was not evaluated in the current study.

Additionally, the study suggests that gender-related differences are linked to environmental and obstetrical risk factors associated with growth restriction. However, it's important to note that the correlation between fetal growth restriction and gender is not universally accepted. Concerning a case of fetal growth restriction, i.e. placental abruption, this complication has been shown to predominantly affect males. In a study of sex differences in placental dysfunction, researchers Ghidine and Salafia (2005) have shown that lesions of chronic inflammation were significantly more evident in male fetuses than in females; this may be manifested in higher rates of placental abruption, as we observed. Also, in cases of placental abruption, stillbirth is more frequent in male fetuses than in females.

Furthermore, diseases such as tuberculosis, cholera, diphtheria, scarlet fever, and diarrhea were present, with tuberculosis being the most prevalent. Notably, diseases that occurred in the 19th century were water-borne diseases that were highly infectious. To preface, waterborne illnesses are primarily caused by swallowing contaminated recreational or drinking water. Many waterborne pathogens can also be acquired by consuming contaminated food or beverages, from contact with animals or their environment, through person-to-person spread, or by breathing in contaminated water droplets (Haines, 2023). As pediatric organizations were established in America in the late 19th and early 20th centuries, from 1835 to 1899, infectious diseases were the primary causes of death among children and adolescents, and medical science had not yet advanced enough to address them (Shulman, 2004). Significant fluctuations

occurred; for example, during the first three decades of the 19th century, the severity of infectious disease increased. Scarlet fever, specifically, was less than observed previously, but then around 1830 increased dramatically. By 1840, scarlet fever had become the leading cause of infectious disease-related deaths among children in the U.S., Great Britain, and Europe.

This study also found that between 1900 and 1935, the mortality rate of diseases such as pneumonia and diabetes increased exponentially. Pneumonia and influenza, tuberculosis, and enteritis with diarrhea were the leading causes of death in the United States, and children under 5 accounted for 40 percent of all deaths from these infections. In the 20th century, childhood and adolescent mortality rates lowered, and infectious diseases slowly declined (Field & Behrman, 2023). This decrease in mortality was due to advancements in public health, living standards, medical science, technology, and clinical practice (McKelvey, 1956). This study further concurs with the argument put forth by Field and Behrman (2023) that during the 19th and 20th centuries, boys had a higher mortality rate than girls across most age groups and for most causes of death.

An early 1928 American study entitled "Sex Differences in the Incidence of Certain Diseases at Different Ages" provides clear evidence of changes in the male-female patterning of illness during early childhood and adolescence (Sweeting, 1995). In children younger than ten years, the incidence of infectious diseases was higher among males than females, reversing to excess among females after that, "an indication which is not so generally observed and regarding which not a great deal of data has been published." A similar picture is painted regarding sex differences in the incidence of respiratory, nervous, digestive, and circulatory disease, where "in general, young boys were affected to a greater extent than young girls...but in adolescence, precisely the opposite is true" (Sweeting, 1995, p. 78).

This study also found that children between 0–5 years suffered the most deaths. In this age group, diphtheria caused more deaths among females, while scarlet fever caused more deaths among males. Among children between the ages of 6–10 years, tuberculosis caused the most deaths, with an equal rate for males and females. Among adolescents, females dominated the deaths caused by tuberculosis in the age groups of 11–15 years and 16–20 years. Notably, there is quite a disparity of deaths in the 19th century compared to the 20th century, where we see an even distribution of deaths between males and females across all age groups. Scholars have identified that this is because, during the 19th century, people were more susceptible to infectious diseases in the U.S. due to the lack of proper public health (McKelvey, 1956).

Considering the deaths from all categories and for all the age groups, it is seen that the absolute differences between the mortality rates in the males and females are most significant for those under 1 year old, reaching a minimum for the 5 to 14 age group, and increases after that age bracket (Ciocco, 1940). There are two age periods: infancy and late adulthood/old age, in which the males exhibit markedly higher mortality

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than the females. Higher male mortality during infancy is due to what might be regarded as the extension into post-natal life of the factors responsible for the high masculinity of stillbirth (Ciocco, 1940).

Also, these scholars noted that various factors, such as social, economic, behavioral, and environmental factors, may have contributed to these diseases and possible health disparities. Some of these include:

- **Poverty and Income:** The relative poverty rate is the proportion of the population with low income relative to the median income. Historically, the U.S. poverty rate declined from very high levels in the 1940s to low levels in the late 1970s; the rate (based on total household income) fell from 40.5 percent in 1949 to 22.1 percent in 1959, 14.4 percent in 1969, and 13.1 percent in 1979. The gap between the levels of income inequality in the United States and other affluent democracies began to widen in the 1970s–1980s, possibly because of the adoption of more conservative economic policies in the United States and a retrenchment in public assistance programs (Woolf & Aron, 2013). Regarding relative poverty, the United States also has the highest child poverty rate. McKelvey (1956) highlights how poverty is a significant factor contributing to mortality rates in Rochester, among many others. One participant in McKelvey's study who witnessed the 1852 cholera-epidemic reports:

  > The house [of the first victim the board reported] was an old rookery without a cellar and presented inside the usual appearances of the residences of the poorer classes of laborers with the usual smell—but nothing very remarkable—the father still lying sick in a small ill-ventilated room adjoining the kitchen…and almost adjoining the house, a small pen containing two small pigs… In front and near the door was an opening into the main sewer into which the slop was thrown—but the water was running clear with a free current. (p. 8)

  It was seen that majorly poorer families suffered during disease outbreaks. The trend first became noticeable in the 1980s, a time of economic transformation in the United States, and the effect on child poverty rates was dramatic. Within the mid-1980s, child poverty increased by almost one-third in the United States. Since then, the country has consistently had the highest relative child poverty rates compared to other high-income countries.

- **Ethnicity and Culture:** Racial-ethnic and cultural health disparities take various forms in many countries. According to Woolf and Aron (2013), these health disparities often mirror significant differences in income, wealth, education, occupation, and neighborhood conditions among people of different races and ethnicities, differences that reflect a

historical legacy of discrimination. In the United States, racial and ethnic groups that have historically experienced discrimination suffer ill health effects from these experiences. The health effects may result from material deprivation, other conditions that directly damage health, and physiologic mechanisms involved in reactions to stress. Such stress can result from overtly discriminatory experiences, and a pervasive vigilance about whether harmful incidents will occur to themselves, or their families has been linked with smoking and hypertension (Woolf & Aron, 2013). In addition, a relative difference in social standing or a sense of social exclusion may induce stress and influence one's sense of self-worth or control, influencing subsequent economic success, health-related behaviors, and health outcomes. Specifically, this happens a lot with immigration, as McKelvey (1956) highlighted, that during the smallpox epidemic in 1884–1885, "the overcrowding of poor immigrants in dilapidated and unsanitary blocks could be checked only when a contagion or fire hazard appeared." (p. 13). Thus, this disregard for sanitary lifestyles among immigrants compared to citizens started the trajectory of the huge gap in health disparities that permeates racial and ethnic groups in the United States.

- **Epigenetic effects:** Social factors—or their consequences in social and physical environments—may also influence health by interacting with a person's genotype in ways that can trigger or suppress the phenotypic expression of deleterious (or favorable) genes that may be related to obesity, heart and lung disease, diabetes, and cancer (Woolf & Aron, 2013). For example, a deleterious gene in one's DNA may not be harmful without specific triggers that "turn on" gene expression and cause cancers to develop. These modifications in gene expression, which are thought to occur through molecular processes (such as histone modification and DNA methylation), can be inherited and affect the health of offspring. *Epigenetics* refers to the transfer of gene expression patterns from generation to generation that does not rely explicitly on differences in the DNA code (Cappa et al., 2011). The literature thus far suggests that prospective, adequately powered studies are warranted to discover the role that epigenetics plays in contributing to the currently intractable racial disparities in morbidity and mortality in the United States. In Rochester's history, there have been instances where environmental exposures have had significant health consequences. While McKelvey's (1956) article did not directly mention epigenetic effects, it is crucial to consider the potential impact of environmental factors and social determinants of health on gene expression, mutations, and long-term health outcomes.

- **Poor geographical location (lack of sewage care, clean water, and healthy food):** By definition, environmental factors affect large groups that share common living or working spaces. Thus, they are key candidates as explanatory factors for health differences across geographic areas, such as

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countries. Indeed, a major motivation for the research on environmental determinants of health has been the repeated observation that many health outcomes are spatially patterned (Woolf & Aron, 2013). These patterns are present across countries and regions, such as urban neighborhoods, within and at smaller scales. For example, during the 19th century, Rochester experienced a period of rapid industrialization that led to waste discharge into local waterways, resulting in pollution and poor water quality. The lack of proper sewage systems also contributed to the spread of waterborne diseases like typhoid fever. In addition, access to healthy food has been a persistent issue in Rochester, particularly in low-income neighborhoods where residents may need access to grocery stores or fresh produce. This can lead to higher rates of diet-related diseases like diabetes and obesity.

- **Household competition:** Household composition is strongly related to income and education and can influence social factors, which in turn, influences health. For example, children in low-income single-parent households experience higher poverty rates, food insecurity, unstable housing, and other adverse living conditions. Poverty strains families and creates a greater risk of single-parent households (Woolf & Aron, 2013). McKelvey (1956) provides historical context by highlighting public health concerns during the 1972 smallpox epidemic in Rochester. The epidemic raised questions about the safety of milk brought into the city on hot days and led to calls for the inspection of slaughterhouses. Additionally, the lack of a public bathhouse and urinal in the city center was deplored, demonstrating the importance of sanitation and hygiene for public health. The board even ordered the demolition of a building that had become a public nuisance, further highlighting the role of the built environment in promoting public health.

Possible Limitations to Research

One potential limitation for a study examining public health outcomes in Rochester, New York, during the 19th and early 20th century is the reliability of vital statistics data. As noted in McKelvey's (1956) article, the collection of vital statistics in urban centers was only reliable sometimes, with instances where doctors neglected to register births and ministers refused to record marriages. This can result in incomplete or inaccurate data, which may compromise the validity and generalizability of research findings. Furthermore, the lack of reliable data on infants can make the analysis more challenging, given the high infant mortality rates in Rochester during the period under study.

Another possible limitation is the omission of gender-specific data, which can have significant implications for research on public health outcomes in Rochester during the late 19th century. At the time, societal norms may have influenced the likelihood of female infants being recorded more often than male infants. For instance, birth attendants, who were often female, may have been more likely to record the gender of

female infants due to cultural and social norms. This could bias the data and limit the ability to accurately analyze and interpret public health outcomes, particularly those related to infant mortality rates.

Furthermore, the lack of gender-specific data may have limited the ability to analyze and interpret other public health outcomes with gender-specific patterns. Certain diseases or health conditions may have affected males and females differently and understanding these differences could have important implications for public health policy and intervention design. As such, it is crucial to consider potential limitations, such as the lack of reliable data and omission of gender-specific data, when interpreting research findings on public health outcomes in Rochester during the late 19th century.

Therefore, researchers should exercise caution when drawing conclusions based on incomplete or biased data and consider other factors that may have influenced public health outcomes, such as environmental or social factors. By accounting for these limitations, researchers can ensure that their conclusions are based on the best available evidence and that their public health policy and intervention design recommendations are appropriately targeted and effective. Overall, recognizing the potential limitations of the data can help ensure that research findings are interpreted and applied appropriately to improve public health outcomes.

Conclusions

Childhood and adolescent mortality rates serve as a crucial measure of population health, reflecting the underlying factors that shape the health status of communities. This study examines mortality in Rochester, New York, during the 19th and early 20th centuries. It underscores the impact of poor living conditions, unsanitary environments, and disease outbreaks on high mortality rates, particularly among children and adolescents. Analyzing the distribution of mortality across different age groups provides an in-depth understanding of the determinants of infant mortality, including factors such as inadequate prenatal care, poor maternal nutrition, and limited access to quality obstetric care. This current research aims to investigate sex-based differences in childhood and adolescent mortality rates across different age groups during this period, contributing to improved public health policies and interventions to reduce mortality rates and improve overall population health.

Given the increasing aging population, knowledge of childhood and adolescent mortality rates and their underlying causes of death has become increasingly important. These findings underscore the need for more comprehensive public health practices, especially those aimed at reducing social inequalities and improving living conditions and access to healthcare services. It is important to note Carr's view that "A society which has lost belief in its capacity to progress in the future will quickly cease to concern itself with its progress in the past" (Scally & Womack, 2004, p.752). The significance of historical research becomes apparent in the context of child and adolescent mortality, which stands as a pivotal concern within the field of public health,

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necessitating immediate attention and comprehensive interventions. By examining the historical trajectory of child and adolescent mortality rates, researchers can gain valuable insight into the underlying factors, trends, and social determinants that have shaped these outcomes. This historical perspective illuminates the issue's roots and informs contemporary efforts to address and mitigate child and adolescent mortality. Therefore, the history of public health can help explore the interplay between fact and historical interpretation—which in turn can help professionals analyze current beliefs and challenge those that are no longer "relevant."

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Appendix

Bronchopneumonia. Pneumonia involving many relatively small areas of lung tissue. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/bronchopneumonia

Cholera Infantum. An acute non-contagious intestinal disturbance of infants formerly common in congested areas of high humidity and temperature, but now rare. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/cholerainfantum

Consumption. Now commonly known as tuberculosis (TB) is a contagious and potentially life-threatening disease transmitted through the air. While it can affect any body part (such as the brain, the kidneys, or the spine), TB usually affects the lungs. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/tuberculosis

Diarrhea. A disease characterized by loose, watery stools three or more times a day. Diarrhea may be acute, persistent, or chronic. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/diarrhea

Diabetes Mellitus. A variable disorder of carbohydrate metabolism caused by a combination of hereditary and environmental factors and usually characterized by inadequate secretion or utilization of insulin, excessive urine production, excessive amounts of sugar in the blood and urine, and thirst, hunger, and weight loss. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/diabetesmellitus

Diphtheria. An acute febrile contagious disease typically marked by the formation of a false membrane, especially in the throat, and caused by a gram-positive bacterium (Corynebacterium diphtheriae) that produces a toxin causing inflammation of the heart and nervous system. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/diphtheria

Dysentery. A disease characterized by severe diarrhea with the passage of mucus and blood and usually caused by infection. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/dysentery

Enteritis. Inflammation of the intestines and especially of the human ileum. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/enteritis

Lobar pneumonia. Acute pneumonia involving one or more lobes of the lung characterized by sudden onset, chill, fever, difficulty in breathing, cough, and blood-stained sputum, marked by consolidation, and normally followed by resolution and return to normal of the lung tissue. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/lobarpnuemonia

Nephritis. Acute or chronic inflammation of the kidney caused by infection, degenerative process, or vascular disease. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/nephritis

Prematurity. Born after a gestation period of less than 37 weeks. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/prematurity

Scarlet Fever. An acute contagious febrile disease caused by hemolytic Group A streptococci and characterized by inflammation of the nose, throat, and mouth, generalized toxemia, and a red rash. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/scarletfever

Still Born. Dead at birth. Stillbirth is a common obstetric complication, constituting nearly half of all perinatal mortalities, and is ten times more common than sudden infant death syndrome. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/stillborn

Typhoid Fever. A communicable disease marked especially by fever, diarrhea, prostration, headache, and intestinal inflammation and caused by a bacterium (Salmonella typhi). (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/typhoidfever

How Does Change in Land Use Impact the Water Chemistry Parameters in the Streams of Oswego County, NY?

Madison Steates & Thomas Back

sponsored and co–authored by Suann Yang, PhD

Abstract

Land use within a watershed is closely tied to stream water chemistry. Anthropogenic chemical inputs eventually make their way into streams, affecting fluvial ecosystems. Sources of these anthropogenic inputs change over time, especially when rural landscapes become increasingly urbanized. We studied the relationship between land use and stream water chemistry for Oswego County, New York, because riparian zones in this county have shifted to residential from agricultural and forested land uses. We extracted data from the New York State Department of Conservation (DEC) Department of Water (DOW) Monitoring Portal. Results show that residential land use contributes higher carbon, nitrogen, and phosphorus to streams in Oswego County, New York. However, the data collected for sites in Oswego County are sparse, and thus our results may be misleading. We will conclude with recommendations to Oswego County for a sampling strategy that better encompasses the major waterways of the county.

L and use has an impact on water quality, with each distinct type of land use (e.g. agriculture, forest, residential, and commercial) impacting the watershed in its own unique way. Land use changes occur constantly and can have various impacts on the surrounding environment including a change in water quality, watershed function, quality of wildlife habitat, and human health (Environmental Protection Agency [EPA], 2022). Land use management is especially important in the outcome of water quality for nearby streams because urbanization increases impervious surfaces, which allows for an increase in runoff to enter the water, degrading the water quality. Degradation of water quality is harmful to aquatic and fluvial ecosystems because increased runoff leads to the formation of harmful algae blooms, and increased suspended solids increase turbidity and harm aquatic wildlife (Giri & Qiu, 2016).

Monitoring these changes in land use is important, especially since the impact on the environment is so great.

Some of the chemicals present in waterways may be a result of runoff from nearby terrestrial sources and have the potential to flow downstream and affect a large area. Water quality monitoring is especially important in regard to chemical parameters because of the large number of chemicals used in everyday life that are usually drained into fluvial ecosystems (Myers, n.d.). The abundance of each of these chemicals is important to monitor because if there is too much or too little of each parameter, the trophic state of the ecosystem may be impacted (Allan et al., 2021).

Some of the most important nutrients to stream ecosystems are nitrogen, phosphorus, and carbon (EPA, n.d.). Nitrogen and phosphorus are typically limiting nutrients in aquatic ecosystems, and carbon is the primary food source (EPA, n.d.). Nitrogen is required for the production of amino acids and proteins. Phosphorus is commonly the limiting factor in aquatic ecosystems; it is necessary for cell division and is present in very small quantities. Nitrogen and phosphorus are both essential for fluvial ecosystems, however, too much may cause eutrophication which can be harmful to the ecosystem (Shen et al., 2020). Carbon is required in aquatic ecosystems in order to provide a food source to low level consumers, however, it is associated with high runoff levels within a fluvial ecosystem (Volk et al., 2002). It is important to focus on these specific chemical parameters because of the influence they have on the water.

New York State's Department of Environmental Conservation (NYS DEC) has been monitoring stream water chemistry since 1972. The historical trends suggest that total Kjeldahl nitrogen and total phosphorus have the most impact on stream water quality in New York State because high concentrations could be detrimental to the fluvial ecosystem (Smith et al., 2018). However, the impact of specific land use types on stream water quality is not well characterized for Oswego County. In this report, we analyzed relationships between the land use surrounding waterways and nitrogen, phosphorus, and dissolved organic carbon, with the goal of providing a starting point for understanding the water quality trends for Oswego County.

Methods

Data was obtained from the NYS DEC Division of Water (DOW) Monitoring Portal. We filtered the data by county and downloaded two separate CSV files that included the chemistry parameters and land use data for only Oswego County. Because land use type for most of the sites was missing from this data source, we classified the dominant land use at the sites by using the coordinates for each sampling site to locate the sites in Google Earth Pro. We zoomed in so that our screen was about 3 square kilometers (eye elevation approximately 3000 ft). This allowed us to accurately assess the land uses at all sites. If multiple land uses were present, whichever land use took up the largest area was determined to be the dominant land use. We used Google Earth Pro's historical imagery feature to determine the land uses at various sampling dates.

Because of insufficient sampling, statistical tests were not possible for comparing Kjeldahl nitrogen, orthophosphate, and dissolved organic carbon across dominant land use of sample sites. Comparisons were made graphically with the *ggplot2* package (Wickham, 2016) in the R Programming Environment (R Core Team, 2022).

Results

The results of our qualitative analysis show that sites classified as residential tended to have the highest impacts. Nitrogen content was highest at residential sites, followed by forested sites, and then commercial and agricultural sites (Figure 1).
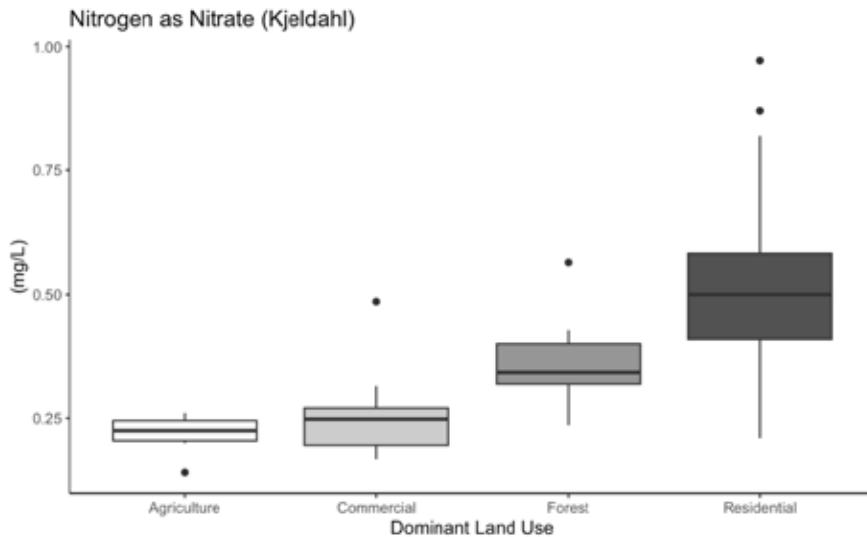

Figure 1: Nitrogen content measured as Nitrate (Kjeldahl) based on land use type.

Similarly, phosphorus was highest for residential sites. The other three land use categories appear to be identical, near zero (Figure 2).
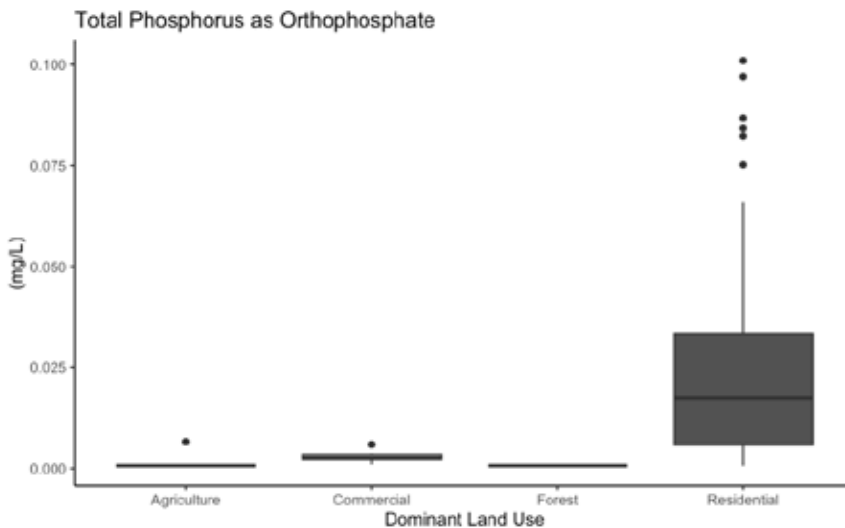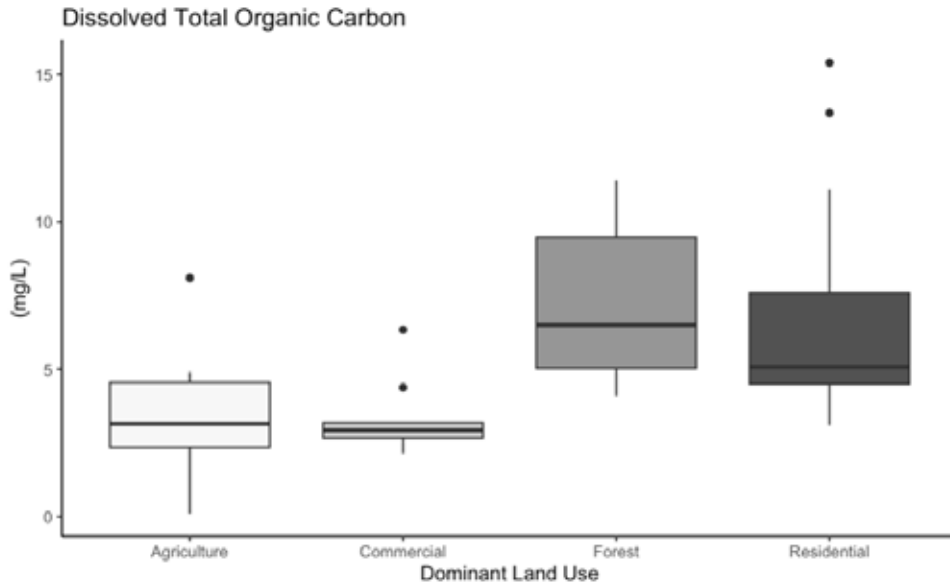

Figure 2: Total Phosphorus as Orthophosphate based on land use type.

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In contrast, carbon was highest for forested sites and residential sites. Agricultural sites may have a higher carbon content than commercial sites do (Figure 3).

Figure 3: Total Dissolved Carbon based on land use type.

Discussion

Residential land use appears to have the highest negative impact on stream water quality. Previous studies show that urbanization increases the amount of impervious surfaces that result in higher amounts of runoff and pollution in the water (Smith et al., 2018). Typically, areas downstream from heavily human-impacted areas have a lower water quality because of point source and nonpoint source pollution sources present in urban areas. Studies that analyze the spatial relations between water chemistry and land use emphasize the importance of understanding the functionality of the ecosystem within a watershed to utilize the most sustainable practices and to prevent pollution from entering the water in the future (Wang, 2001).

Although our results show higher values of nitrogen and phosphorus in the stream near residential land use, that does not mean that these values are high enough for concern. Typically, small amounts of these chemicals are necessary for the functionality of the ecosystem (Giri & Qiu, 2016). Because these nutrients are cycled rapidly through ecosystems, and concentrations can vary vastly across ecosystems, the NYS DEC uses a narrative-based assessment of these values instead of a numeric standard (in contrast to pollutants such as heavy metals). This standard is "None in amounts that result in the growths of algae, weeds and slimes that will impair the waters for their best usages" (NYS DEC, n.d.). We were not able to assess whether or not the levels of nitrogen, phosphorus and dissolved organic carbon did lead to excess growth. This is again due to the lack of data available to us. To fully assess the level of these

nutrients using the narrative standard that the DEC uses, there would need to be data collected containing biomass quantities. This data collection can be done through direct sample collection or through estimation (Madsen, 1993).

Our ability to compare the impacts of land use types on carbon, nitrogen and phosphorus was limited by sampling history in Oswego County, which illustrates the importance of consistent water monitoring. Land use data collected from the NYS DEC was limited for Oswego County; there were not enough values to adequately complete a full historic analysis without collecting our own data manually using Google Earth. Overall, the land use historical analysis was difficult to accomplish; however, based on the results of this study, the patterns of land use in Oswego County is an important factor for the water quality of the surrounding watersheds. Moving forward, we recommend sampling from sites more evenly across different land uses, and more regularly.

Overall, it is important to pay attention to how human activities impact stream water quality because of how easily disturbed a fluvial ecosystem is. Stream water quality monitoring with standardized sampling techniques allow for comparisons within and between water conservation districts (Smith et al., 2018). A more systematic sampling scheme for Oswego County will permit a more complete analysis of land use impacts in the future, and help identify conservation priorities for these stream ecosystems.

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Hungry for Change:
Food Politics and the 18th Century History of Jamaican Maroons

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Abstract

This paper focuses on the food history of Maroons in Jamaica. More specifically, it analyzes the ways in which food was political in Jamaican Maroon society. In the existing historiography, the preeminent scholars of Jamaican Maroons argue that Maroons had little political agency in their negotiations with the British. I argue that the lens of food shows a political agency that those scholars have largely left out. To arrive at this conclusion, I mainly relied on 18th and 19th century historians as primary sources. I also utilized Maroon treaties, law codes, and court records as primary sources.

Marronage, meaning the freeing of oneself from slavery, was widespread in the Atlantic in terms of time; this form of resistance is as old as slavery itself. But it was not entirely pervasive geographically. One major prerequisite for marronage was an environment capable of keeping people hidden. The island of Barbados, for example, was too small and too flat to hide escaped people. Jamaica was not such an island; its mountainous terrain turned out to be more than suitable to the needs of Maroons—those who freed themselves from enslavement.

The scholarship on Jamaican Maroons is more prolific than any other Maroon group (Campbelll, 1988; Cumper, 1962; Kopytoff, 1978; Patterson, 1970). The reason why is as follows: two Maroon groups, called the Leeward and the Windward, became the first to formally negotiate with colonists in 1739 and 1740, respectively (Campbelll, 1988). Although other groups successfully resisted colonist efforts to re-enslave them, Jamaican Maroons were the only Caribbean group to broker a peace deal in the 18th century. This is the anomaly that historians have wrestled with for decades now. Why did Jamaican Maroons negotiate but not others?

In answering this question, scholars must utilize the source most readily available to them—the works of 18th and 19th century authors. Traditional historians agree with their sources that the contents of Maroon treaties heavily "favored the colonial authorities and local plantocracy" (Campbell, 1988, p. 131). The only way this could

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have happened, they argue, was if Maroons were deceived somehow in the negotiation process. This narrative, crafted by 19th century authors and embraced by the first Maroon scholars, shows the "triumph of diplomacy over warfare," or put another way, the superior negotiation tactics of colonists (Campbelll, 1988, p. 129). In this narrative, the political agency lies in the hands of the colonists.

This paper calls for a new interpretation of Maroon political agency, one that exists at the intersection between two budding fields of research: Atlantic world food histories and new histories of slavery. In the former field, scholars are theorizing different ways in which food is political (Carney, 2002; Carney & Rosomoff, 2011; Harris, 2012; Mintz, 1986). In the latter field, historians are telling new stories that center the agency of those who resisted slavery, including Maroons (Brown, 2020; Burnard, 2009; Chopra, 2018; Dubois, 2004; Kars, 2020; Thompson, 2006).

Through the lens of food, I will argue that Maroons made savvy political decisions in their negotiations with the British. In making this argument, I will first describe the Maroon war time food system. Then, I will discuss how the treaties of 1739 brought about positive changes to Maroon life. Examining the food politics of the Maroons suggests that the Leeward and Windward Treaties unfolded contrary to how it has been described by the traditional scholarship. According to my own interpretation, Maroons successfully negotiated on behalf of their own interests. This is a dramatic break from the scholarship that portrays Maroons as diplomatically ignorant. Beyond its historiographical significance, examining food politics reveals how food is often crucially important in the decisions we make.

Food in the Time of War

In Jamaica, Maroons utilized the geographic features of two environments: the Windward Maroons lived in the Blue Mountains, and the Leeward lived in a region of steep hills known as the Cockpit Country (Higginson, 1889). It was in these hills and mountains that Maroons were able to ward off the advances of colonist soldiers. Especially later into the history of Maroon/settler conflict, colonial authorities adopted total warfare tactics that were aimed at Maroon provision grounds rather than the Maroons themselves. This was no easy task, though, given that the Jamaican forests were dense and difficult to traverse.

Even without confirmation from 19th century books, we know that Maroons grew a substantial amount of the food they consumed because the colonial government would not have targeted their provision grounds otherwise. Of all the crops they grew, contemporary authors seem to think that maize, also referred to as Indian corn, was most essential to Maroon sustenance. Nineteenth century author Thomas Coke (1808), for example, claimed Maroons lived off the maize they planted "in the most inaccessible parts" of the mountains (p. 306).

In addition to maize, root vegetables, such as cassava, yams, and sweet potatoes, were highly valued by Maroons because of their ability to thrive in the tropics. Admittedly,

there were some drawbacks to cultivating cassava; the root is poisonous when raw and must go through a lengthy process in order to become edible. But several factors made it an appealing option for Maroons. Crucially, few crops compare to cassava in terms of its hardiness and caloric value. Since it is a root, cassava has the added benefit of being harder to detect than other crops like maize (Higman, 2008). Maroons had green thumbs for sure, but colonists understood them to be expert hunters more than anything else. Higginson (1889) was one of many writers who suggested that the origin of the term "Maroon" was tied to their status as hunters. "The word Maroon is derived," he said, from the Spanish term for "a wild boar," the favorite target of Maroons (p. 118).

Mayne Reid, a contemporary of Higginson but different in the sense that he was a fiction writer, not only suggested the term Maroon was connected to Maroon hog-hunting, but he described what it might have looked like. In his book *The Maroon*, the protagonist, Herbert, was stumbling through the woods when he came across a wild boar (Reid, 1870). Shortly after being startled by the boar, Herbert observed a "bullet hissed through the air" and effectively crippled one of the boar's back legs. Although wounded, the aggravated boar was still as formidable as ever. To Herbert's surprise, the next attack from the hunter, a young man who appeared to be a Maroon, was not with a gun but with a sword. Acrobatically, the Maroon "sprang high into the air" and cleared the boar (Reid, 1870, p. 95). Before the beast could reposition itself, the man pressed down with his sword with great strength until the boar was dead.

Obviously, this account of Maroon hunting is romanticized. The hunting techniques Maroons used probably required much less energy than the techniques that Reid describes. If given the chance, for example, Maroons probably would have killed the boar with a gun rather than a sword. In writing this piece, Reid had an interest in making the events spectacular since he was writing to a broad audience. However, we can trust that the spectacular events that Reid described were based in some truth.

Although Maroons were most associated with hog-hunting, the game that they hunted was not limited to wild boar. One of the stranger animals in their diet was the land-crab. "In the companies of millions," writes Higginson (1889), land-crabs regularly migrated back and forth from the ocean to the mountains (p. 127). Birds were a more difficult game than crabs, but certainly the variety and ubiquity of bird species on the island enticed Maroons. Ring-tail pigeons were the most popular to hunt. Although difficult to shoot, pigeons provided Maroons with a "lump of fat" that was at once tasty and energy rich. Colonists agreed it was "one of the most delicate viands" available on the island (Beckford, 1790, p. 389).

Hunting and growing provided Maroons with much of what they needed to sustain themselves. However, they could not completely depend on it. Maroons' ability to hunt was restricted by their relationship with colonists. Colonists were obviously hostile to Maroons because communities of escaped slaves threatened any society, such as colonial Jamaica, which revolved around slavery. The conflict between British settlers

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and escaped slaves is often conceptualized as a war that spanned from 1728 to 1739. However, it is more accurate to remember their relationship as a state of constant conflict from the British conquest of the island in 1655, to the Maroon treaties of 1739. Therefore, trespassing on colonist land, which was vast compared to the rest of the island, was always a risk for Maroons. And although agriculture is generally more reliable than hunting, severe weather in Jamaica made crop failures a real threat. To supplement their diets, Maroons foraged for a variety of plants. Maroons probably foraged all types of plants including the "roots and herbs which were nourished by the intense action of the [sun]" (Coke, 1808, p. 54).

When foraging, hunting, and agriculture were not sufficient for Maroon necessities or desires, they turned to plantation raiding. These raids had enormous implications for the history of Maroons because they escalated the war with the previously mentioned colonial state in 1728. For some contemporary authors, like Thomas Coke, Maroons raided plantations when "hunger" led them to "descend upon the plains, to pillage provisions from new settlers" (Coke, 1808, p. 306). Other authors presented the raids in a different light, arguing it was the Maroons' "dastardly method of conducting war" (Edwards, 1796, p. 8).

Regardless of why Maroons attacked plantations, a careful source reading confirms that they did. In 1734, colonists began to construct barracks around Maroon territory. According to Thomas Coke (1808), the location of each outpost was consciously selected so as to create a "chain of fortifications" (p. 308). It was the hope of the colonial government that this blockade, so to speak, would dissuade Maroons from approaching plantations. A conscious effort like this would not have been made unless there was a considerable track-record of Maroons raiding plantations.

Maroons took the risk of raiding plantations, in part, because it was not only food they were after. Edwards claimed Maroons "carried slaves into captivity" when they raided (Edwards, 1796, p. 8). Maroon communities at this time were mostly made up of people who escaped slavery on their own will. However, scholars also accept that at least some members of the Maroon population were kidnapped (Kopytoff, 1978). Maroons also would have valued tools, weapons, and other worldly products they could not produce in isolation.

To stop Maroon raids, the British military began to launch attacks from their forward bases in the barracks in which they targeted Maroon homes and provision grounds. The escalation of colonial tactics weakened food supplies and added profound stressors to Maroon lives. When the colonist total warfare tactics are considered, it seems that Edward Long (1774) might not have been far from the truth when he claimed Cudjoe, leader of the Leeward, was in a hungry and somewhat desperate state in the year before peace.

Implications of the Leeward Treaty

Eventually, both sides became tired of waging the war. In 1739, Governor Edward Trelawny met with Captain Cudjoe of the Leeward and the two parties reached an agreement for peace. In the following year the Windward signed their own peace treaty. Since it is largely based on the Leeward treaty, this paper will focus on the earlier of the two. For such a significant moment in the history of Jamaican Maroons, the treaty is a relatively short document (fifteen articles and a preamble). Most articles serve one of two purposes: to either make the island a safer environment for the colonists or provide Maroons with basic rights. The most obvious example of the former purpose was the cessation of fighting in article one. However, other articles stabilized the colonist state in alternative ways. For example, article seven called for Maroons to defend the island in case it was "invaded by any foreign enemy" (Guthrie et al., 1739)). Fewer articles were dedicated to Maroon rights and liberties. Article two might be considered the most important since it guarantees Maroons a "perfect state of freedom and liberty" (Guthrie et al., 1739).

By and large, the traditional Maroon scholarship views the Leeward Treaty as completely unfavorable and unnecessary to the Maroons. Many argue that while the treaty provides basic rights to Maroons, it had the actual effect of restricting Maroon freedoms—a devastating blow for Maroons according to Campbelll (1988) and like-minded scholars. And all of this for what? "Maroons were never defeated in battle," she contends, and therefore did not need to negotiate (p. 129). According to this interpretation, the treaty was a needless action for Maroons brought about by superior colonist diplomacy.

This essay offers a rebuke of the traditional narrative. Contrary to the traditional argument, Maroons made savvy political decisions while negotiating with the colonists in 1739. Implicated in this argument is that Maroons were agents of political change. This conclusion is reached by analyzing the Leeward Treaty of 1739 from the perspective of food politics. In the following paragraphs, I will describe the positive changes made to the Maroon food system brought about by the Leeward Treaty. Mainly, I will discuss the stability that the treaty brought to various Maroon food sources.

The first article of the Leeward Treaty states, "that all hostilities shall cease on both sides forever." To the outside observer, this article has no immediate connection to food. However, we should remember that the primary target of the colonial military was Maroon crops. Therefore, an end to hostilities meant that food would no longer be scarce. Although the first article of the Leeward Treaty does not mention food, it had the effect of stabilizing the Maroon food system by protecting their provision grounds, their water supplies, and their own lives while hunting or foraging.

Although the lands set aside for Maroon communities were considered to be of poor quality, 18th century authors provide evidence that Maroon territory post-treaty was at least partially cultivable. Robert Charles Dallas (1807) provided a particularly detailed analysis of Maroon agriculture. Although "the soil of the mountain was unfa-

vorable," Maroons were able to grow a variety of crops—most notably maize. He also claimed that Maroons grew a variety of roots like yams, cassava, and sweet potatoes (p. 106). It is worth remembering that many of the foods Maroons had grown for decades, like cassava and callaloo, were hardy crops that have been proven to grow in the mountains of Jamaica. In addition to those crops, Higginson (1889) adds that Maroons eventually grew orchards which consisted of guavas, papaws, and avocados. Higginson and Dallas generally wrote favorably of Maroons, but even Bryan Edwards, the contemporary author most critical of Maroons, admitted to having seen Maroons cultivate their land. "I have sometimes observed," said Edwards, "patches of Indian corn and yams, and perhaps a few straggling plantain trees" (Edwards, 1796, p. 30). Maroon land in the Cockpit Country and in the Blue Mountains was not ideal for agriculture; that does not mean Maroons were incapable of growing crops there. The work of Dallas, Higginson, and Edwards confirm that Maroons cultivated several crops in their gardens. Therefore, Maroons did not relinquish their rights to subsist off their own gardens by agreeing to limit their territory.

Additionally, Maroons did not forfeit their right to hunt when they signed treaties; if anything, they made it safer to hunt by negotiating with the colonists. While at war, Maroons hunted several species including pigeons, crabs, and most notably wild hog. It might be thought that Maroons severely impeded their ability to hunt by agreeing to limit their land. However, one article of the Leeward Treaty permitted Maroons to "hunt where they shall think fit, except within three miles of any settlement, crawl, or pen." In case they ran into white settlers on the hunt, Leeward Maroons were to split their winnings with the settlers. Although they would have liked to keep it all, ceding part of their meat was better than the previous consequence of running into colonists while hunting: a firefight. Maroons maintained their right to hunt through negotiations with colonists, but they also made it so that they could hunt at ease knowing their lives were not in danger if their game brought them in contact with others.

They continued to raise cattle, chickens, and hogs (Dallas, 1807). Presumably, they continued to forage for all of the delicious fruits found in Jamaica's forests. The only source of food Maroons gave up by signing treaties was the food they stole from settlers and the enslaved. What they lost out on in that respect was replenished through trade with their former enemies (Edwards, 1796). The point is, Maroon food sources were varied in the post-war years similar to how they were while at war. The crucial difference between the war time food sources and the post-war food sources is that the latter were not subjected to colonist war tactics. And given that subsistence strategies like horticulture and hunting did not become less viable after the treaty, it is safe to say that Maroons subsisted much more comfortably after the war than they did during the war.

Scholars aligned with the traditional narrative downplay the significance of Maroons stabilizing their food system. According to sociologist Orlando Patterson (1970), the Leeward Treaty was a "completely unnecessary sell-out" because Maroons never lost a battle (p. 312). While it is true that Maroons were militarily more successful than the

British, Patterson and other traditional historians fail to realize that the stress of war might have brought them to the negotiating table, not their diplomatic ignorance. A good deal of the stress they lived with was due to the instability of their food system. Edward Long claimed that Maroons were "reduced to so miserable a condition by famine" that they nearly surrendered (Long, 1774, p. 2.344). This claim appears to be an exaggeration. Maroons, who experienced brutal colonist war tactics for several years, probably realized the harsh treatment that awaited them if they were to surrender. And if the colonists had thought there was a chance that Maroons would have surrendered, they would have continued their war effort. Even though surrender was not on the table for Maroons, the hardships they faced while at war were significant. In particular, attacks on their food system caused Maroons periodic hunger and constant stress. Edward Long was probably closer to the truth when he said that Maroons were "wearied out with this tedious conflict" (Long, 1774, p. 2.344). In this light, Maroons wisely engaged in peace talks because it added security to their turbulent lives.

A desire to stabilize their lives only partially explains the unique history of treaty negotiations for Jamaican Maroons; colonists practiced total warfare tactics elsewhere, and yet only Jamaican Maroons formally negotiated with the colonists. Part of the answer to this question is that the colonial authorities in Jamaica were particularly spent from fighting the war. But Maroons also had a different food related goal in mind: expanding their economy into the colonial sphere. Perhaps the most neglected part of the Leeward Treaty is article 4—that which permits Maroons to trade. One of the effects of this article was that Maroons became competitors to colonist merchants; this undoubtedly conflicted with the interests of colonial authorities. For this reason, we can assume that Maroons negotiated for the inclusion of this article.

Conclusion

This paper is based on a longer thesis of the same name. The full-length thesis goes on to discuss other topics such as Maroon trade after the treaties and the Second Maroon War. However, the significance remains the same as the thesis it is based on. For one, the interpretation of Maroon politics presented here is dramatically different from the traditional narrative. Campbelll, and like-minded scholars, would have us believe that Maroons were totally ignorant of their own diplomatic interests; their agency, then, is reduced to violence. This paper breaks with the traditional narrative by arguing that not only were Maroons aware of their own interests, but they negotiated on behalf of their interests. This is demonstrated in the history of Jamaican Maroon food sources. The approach taken here is aligned with a somewhat recent wave of scholarship that attempts to not only center the experience of enslaved people in the Atlantic world, but articulate their agency. When such an approach is taken, as shown here, quite different results can be reached.

The other lens used in this paper, food history, provides another source of significance. Here, food is shown to be political in a couple of ways. For Maroons, food

was political because it fueled their political actions. Clearly the British realized this because they made a concerted effort to starve the Maroons. Food was also political in the sense that it could be a commodity—a subject covered in the full-length thesis. The political value of subsistence and commodity foods can be observed in the two most significant Maroon political documents, the Leeward and Windward treaties. However, given that all humans need to subsist and that many have utilized food as commodities to coalesce power, the lens of food politics is not limited to Jamaican Maroons. In fact, all topics in history have the potential to be reanalyzed from the perspective of food politics. Documents that have been poured over by historians, like the Leeward and Windward treaties, might tell a different story if considered from this angle. In this case, it appears that Maroons were not unwittingly dragged into negotiations—they were hungry for change.

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Music That Fuels a Family

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sponsored by James Kimball, MA

Abstract

This is part of a panel presentation about music from home. An essay about music through different generations and how the music from each generation carries on to the next. Simple things like dancing in the kitchen have roots deeper in the ground than one would think. Even if the religious and folk music has fizzled out, even if no one in the family can play the banjo anymore, even if the family that has started the musical traditions are no longer here…the music that fuels the family is still alive and well, spilling through each generation to come.

My whole life, my family and I have always enjoyed music together. We would sing and dance in the kitchen while cooking, usually making a mess. Around the holidays, when all of my extended family gets together, we always sing and dance while preparing dinner, usually to Christmas songs around the holidays. My sister and I sing and dance together whenever we get the chance, including in public (like randomly in a supermarket), where we likely embarrass ourselves. Heck, I even taught some of my teammates how to line dance. I had always wondered how the singing and dancing in the kitchen tradition began, as my maternal grandmother would also always sing and dance with us. So, I decided to interview my grandmother, Robin, about our family and how we got our musical traditions. Turns out, her parents were even more musical than she was, and our love of music stems back to them.

First, a little background about my great-grandparents. My great-grandfather, George, was born in America, but his parents were from Scotland. When he was growing up, his parents would sing traditional Scottish songs, and even play the bagpipes. To this day, we still have my great-grandfather's kilt (and I am fairly certain that we have his father's old bagpipes somewhere). By the time George was eighteen, he was drafted to fight in WWII. Since he was so talented in learning languages, he quickly became a translator, which was an extremely dangerous job. He had to help interrogate and even spy on the Nazis. What got him through it was telling himself that he had to get home to his wife, Marilyn. By the end of the war, he was fluent in German and Mandarin, as well as having a wealth of knowledge in French and Spanish. After the war, George came home to his wife, Marilyn, and they had children.

My great-grandmother, Marilyn, on the other hand, had a family that was from Norway. So many of Marilyn's habits and traditions have a Norwegian background, including the loving and playing of folk music, often with religious influence. Marilyn loved to sing and dance, and most importantly, play the banjo. These traditions only grew once she had children with George.

My grandmother, Robin, recalls setting the dinner table with her brother Scott as kids, but it was never in silence. Marilyn would play the banjo, and George would sing at the top of his lungs, in one of the many languages he spoke (I guess it was whatever he was feeling that day). Marilyn would play a variety of songs including religious songs and hymns, German songs that George taught her, and what Robin and Scott describe as "homemade songs," which were songs that she made up on the spot, sometimes sweet, and sometimes funny. George and Marilyn's love for each other was well represented in these musical sessions, as they sang about their love for each other, and would even change the lyrics in the songs to describe one another. At the time, my grandmother thought it was embarrassing, but now she realizes how much they really loved each other, and she would do anything to hear one of their songs again. Before George and Scott would leave the house, Marilyn would force Robin to sing with her. She would even sit outside of the bathroom when Robin was taking a bath and yell "Sing, Robbie!" quite literally cornering her into singing with her. Unfortunately, Scott and Robin do not have much recollection of these songs, so the specific songs have not been passed down, but the love for music sure has been.

Marilyn passed away at a young age from cancer, but George lived a very long life, outliving three wives. When George passed, his funeral was very ceremonial, as it was both a traditional Scottish funeral and a military funeral. There were men there in kilts who played the bagpipes, as well as military men who presented my grandmother with a flag. After his funeral, the family decided to celebrate his life in the most "George" way possible, they drank. I was only thirteen at the time, so I just sat back and watched as everyone else pounded drinks at a Scottish pub. Outside on the patio, there was a Scottish band, playing and singing Scottish songs. During a break in their playing, my aunt told the band about our situation. They gave their condolences and offered to play somber music that would honor his life, but that's not what he would have wanted. She told them to play songs that we could dance to, the perfect tribute. Everyone in my family danced that day, even the stubborn ones who usually do not. We even danced with the youngest members of our family, who were still figuring out how to walk. We danced, we sang, we cried, but most importantly, we celebrated his life the best way we knew how. With music and with love.

George passed away at 98 years old, which gave me the amazing opportunity to meet him and get to know him. Although I only really knew him as an old man, he inspired me in so many ways. He was the reason I decided to start taking German classes. He was also the reason I decided to start learning the ukulele. He spoke so highly of Marilyn, his first wife, who was so musically talented, that I wanted to keep that part of the family alive if I could, as most of my family members do not play an instrument.

I figured that the ukulele could be a good instrument to learn basics on, then I could attempt to find a banjo and learn to play later.

After George's passing, my grandmother gave me one of Marilyn's banjos that she found at his house since I am one of the only people in the family who has an interest in musical instruments. It was in desperate need of love and repairs, and at the time, I was still just dipping my toes in the water with my ukulele. My grandmother also knows how much I enjoy writing, so she gave me all of the letters that George and Marilyn sent back and forth while he was away at war, in hopes that I could make a story out of them. I have tried and tried, but no matter what I did with them, or what approach I took, I just never felt like I could capture their life and their love the right way. After interviewing my grandmother, I think that I may have a new approach to these letters. I want to revisit the letters and get the banjo restrung. I will teach myself to play the banjo and write a song with the letters. I am not particularly musically inclined. But I would like to think my writing has some backbone to it, so if I can get my words to come off my pen in the right way, I would hope that I could finally create something that captures who my great grandparents are and how much they loved each other.

My entire family misses my great-grandfather desperately, and though most of us did not get a chance to meet Marilyn, we all can feel a strong connection with her still even though we have never spoken to her. Through my great-grandfather, and through music.