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The McNair Research Journal is a multidisciplinary journal of undergraduate research conducted by the McNair Scholars cohort of 2022-2023.



DIVISION OF DIVERSITY AND COMMUNITY ENGAGEMENT
THE UNIVERSITY OF TEXAS AT AUSTIN

Vice President for Diversity and Community Engagement

1 University Station G1050 • Main 12 • Austin, TX 78712-0538 • (512) 471-3212 • Fax (512) 471-0819

September 18, 2023

The Division of Diversity and Community Engagement (DDCE) is honored to have McNair Scholars as part of its portfolio and fully supports the program's goal of increasing the number of low-income and first-generation college students pursuing graduate education. This goal is consistent with the DDCE's efforts to create an intellectually and culturally diverse environment at the University.

Therefore, it is my pleasure to offer an introduction to this year's issue of the *McNair Scholars Research Journal of The University of Texas at Austin*. The students published in this issue are Scholars who were selected to participate in UT's rigorous McNair Summer Research Institute.

These student scholars work with faculty mentors who support their research interests and guide them through a research process that concludes in completing articles for publication in this, the *McNair Journal*. Not only does the journal offer a steppingstone for student scholars seeking out publication opportunities, it also provides a public venue for graduate programs to see impressive examples of the students' academic work.

As is evident in this issue, the research interests of the 2022 cohort of McNair Scholars are as diverse as the students themselves. This annual publication marks the culmination of each Scholar's dedication and determination in McNair. We also hope it marks the launching of a fruitful pursuit of scholarly advancement, followed by a fulfilling professional career in research.

I have no doubt readers of this journal will recognize the value of McNair Scholars, and the opportunity it offers to participating undergraduates whose scholarly ambitions and accomplishments are a reflection of what represents the best of The University of Texas at Austin.

A handwritten signature in black ink, appearing to read "LaToya Smith".

LaToya Smith, Ph. D.
Vice President
Diversity and Community Engagement



THE UNIVERSITY OF TEXAS AT AUSTIN

Division of Diversity and Community Engagement

100 W. Dean Keeton Street, A5700 Austin, TX 78712 • diversity.utexas.edu/academiccenters

A Message from the Director

I am honored to present this year's volume of the *McNair Scholars Research Journal at The University of Texas at Austin*. This journal represents the acuity and effort of our McNair Scholars during their Summer Research Institute. The research included here is a testament to the deep commitment and high capacity of our Scholars. This year, as every year, the *McNair Journal* showcases the tradition of our Scholars persistently achieving academic excellence.

Established at UT-Austin in 2007, McNair Scholars prepares high-priority students for doctoral studies through engagement with research methods, faculty mentoring, graduate studies colloquia, and other scholarly and communal activities. As we near our twentieth anniversary, our McNair program continues to prepare low-income and first-generation college students, as well as students from communities underrepresented in graduate programs and research professions, for success in earning and employing their Ph.D.'s.

This year's journal contains the work of Scholars who completed the 2022 Summer Research Institute. We are proud of their achievements in conducting and completing original research. It has been, and will continue to be, our privilege to support these Scholars with their future academic endeavors. We are confident they'll do great things.

Many individuals make McNair successful. First and foremost, I want to thank all the faculty mentors for their guidance and expertise working with our Scholars and helping them reach their fullest potential. McNair also depends on collaborations with our incredible staff, especially our Graduate Assistants, who work hard to ensure that each year we put forth a program that is meaningful for students and respected across higher education. I want to extend special appreciation to Dr. Tiffany Lewis, Assistant Vice President in the Longhorn Center for Academic Equity, and Dr. LaToya Smith, Vice President of the Division Diversity and Community Engagement, both of whom offer unwavering commitment to McNair Scholars. Finally, I want to acknowledge Dr. Nabeeha Chaudhary, our Senior Program Coordinator, whose dedication to and support of Scholars is unflagging. I am fortunate to have such a terrific colleague running the program with me.

With the support of these, and many other, professionals, alongside the perseverance and goodwill of the McNair Scholars themselves, we can continue to demonstrate that, in The University of Texas at Austin's McNair Scholars program, "What Starts Here Changes the World."

Thank you,

A handwritten signature in black ink, appearing to read "Eric Dieter".

Eric Dieter, Ph.D.

Director and Principal Investigator

UT-Austin McNair Scholars

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“What Are You Eating?” An Exploratory Study of Fruit and Vegetable Consumption and Overall Diet Quality Among Hispanics With Higher Educational Attainment in Texas.

Mariela Jiménez Rivero

The University of Texas at Austin

Faculty Mentor: Vanessa Errisuriz, PhD

Hispanics in the United States are at high risk for developing diet-related chronic illnesses such as obesity and type 2 diabetes. Nutrition knowledge and self-reported barriers to healthy eating (e.g., time, inconvenience, cost) have been linked to diet among US Hispanics. Hispanics account for 40.2% of the population in Texas and are a heterogenous group. However, research examining factors that impact Hispanics' diet is most often conducted among those from a lower socioeconomic status (SES) background, and little is known about the factors that impact the diet of higher SES Hispanics. Therefore, this exploratory, cross-sectional study examines relationships between nutrition knowledge, common perceived barriers to healthy eating, and fruit and vegetable consumption and overall diet quality among 139 Hispanic adults in Texas with an educational attainment of a bachelor's degree or higher. Data were collected via an online survey. Logistic regressions showed that higher nutrition knowledge is associated with greater odds of high fruit and vegetable consumption and a higher overall diet quality. Additionally, participants who reported cost, time, and taste as barriers to healthy eating had lower odds of high vegetable consumption and high overall diet quality. Some of the barriers associated with diet quality among low SES Hispanics were not observed in this study. Therefore, more research is needed to identify determinants of low diet quality and fruit and vegetable consumption among higher SES Hispanics to develop more effective intervention approaches for this understudied population.

Keywords: nutrition knowledge, diet quality, barriers, Hispanic, educational attainment

Introduction

According to the Centers for Disease Control and Prevention (CDC), only 12.3% of adults 18 years and older in the United States (U.S.) meet the recommended fruit intake of 1½ -2 cups for women and 2-2 ½ cups for men per day, depending on age.^{1,2} Less than 10% meet the recommended vegetable intake of 2-3 cups for women and 2-4 cups for men per day, depending on age.² Examining diet among US Hispanics is important as they currently account for 18.9% of the US population and are projected to increase to 28% of the population by 2060.^{3,4} Although Hispanics are more likely to report meeting recommendations for fruit and vegetable intake than their non-Hispanic White counterparts, they are at great risk for negative health outcomes and chronic illnesses attributed to poor dietary habits.^{1,5,6} For instance, Hispanics are 11.8% more likely to be diagnosed with type 2 diabetes than their non-Hispanic White counterparts.⁶

Current research suggests that factors such as education level and nutrition knowledge influence diet quality of US Hispanics. Higher educational attainment and nutrition knowledge are associated with greater intake of fruits and vegetables.^{7,8} Research has also linked poor diet quality among Hispanics with perceived barriers to healthy eating. For example, individuals who report a lack of time to prepare healthy foods also report lower fruit and vegetable intake.⁹ Additionally, adults who perceive barriers such as lack of time, inconvenience, and cost of healthy foods have poor overall diet quality.¹⁰

Although much of the previous research examining diet among US Hispanics has been conducted among those from lower socioeconomic status (SES) backgrounds, Hispanics are a diverse and dynamic population.¹¹ In Texas, Hispanics account for 40.2% of the population, and about 18% of Hispanics 25 years and older have a bachelor's degree or a graduate or professional degree.^{4,12} However, scarce research examines factors that influence diet among Hispanics from higher SES backgrounds, and it is unclear whether the factors that impact diet among Hispanics from lower SES similarly affect their higher SES counterparts. Therefore, this exploratory study aims to examine the relationships between nutrition knowledge, barriers to healthy eating (e.g., support, time, cost, etc.), fruit and vegetable consumption and overall diet quality among Hispanics residing in Texas with an educational attainment of a bachelor's degree or higher. Due to the exploratory nature of the study, no hypotheses were drawn.

Methods

Data

Data are from the *What Are You Eating?* study, a cross-sectional, anonymous, bilingual (English, Spanish) survey that assessed respondents' demographics, nutrition knowledge, dietary habits, overall diet quality, and perceived barriers to healthy eating. Individuals were eligible to participate in the survey if they self-reported

that they were Hispanic, 18 years or older, and resided in Texas. Recruitment strategies included distributing the survey flyer and link through email lists and newsletters of higher education institutions and community organizations in Texas. Participants were also asked to share the survey link and flyer with their friends and family. At the beginning of the survey, participants were given a description of the study that included the study's purpose and were asked to specify their consent by clicking on the link to begin the survey. The survey was administered online via Qualtrics¹³ and took approximately 20 minutes to complete. The study was approved by the Institutional Review Board of the University of Texas at Austin.

Sample

The convenience sample resulted in 216 individuals who accessed the survey, with 139 participants included in the analysis. Those excluded from the analysis were participants who did not meet the inclusion criteria (n=8), did not complete the survey (n=32), or had an education level less than a bachelor's degree or did not indicate educational attainment (n=37). Participants were mostly 36 years and older (69.6%), female (79.0%), Mexican, Mexican American, or Chicano (88.5%), and had an income of \$60,000 or higher (86.2%).

Measures

Demographics. Participants answered demographic questions about sex (male, female), age (18-25, 26-35, 36-45, 46-55, 56+ years), ethnicity (e.g., Mexican, Mexican American, or Chicano, Puerto Rican, Cuban, etc.), and annual income (1=less than \$10,000 to 11=More than \$150,000). Age was dichotomized into ≤ 35 years and ≥ 36 years, and annual income was dichotomized into $< \$60,000$ and $\geq \$60,000$ based on the median annual income in Texas.¹⁴

Nutrition Knowledge. Nutrition knowledge about 5 food groups (i.e., fruits, vegetables, proteins, dairy, and grains) was assessed using 25 questions adapted from the U.S. Department of Agriculture's (USDA) MyPlate Quiz.¹⁵ Knowledge related to each food group was assessed via five multiple-choice questions (e.g., "Which of these nutrients can you get from eating whole fruits that is not usually found in juice?", "What vitamin gives carrots and sweet potatoes their orange color?"), and participants were asked to identify the correct answer or select "I don't know." The responses were scored for correctness for each food group (0=incorrect/I do not know, 1=correct), and then summed for a total quiz score that ranged between 0 and 25.

Perceived Barriers. Participants reported barriers to healthy eating by indicating which of 8 items, if any, applied to them: i.e., I'm not sure how to eat healthy, costs too much, takes too much time, inconvenient, taste and flavor, others in the house do not want to, cannot find information in my language, no support system (someone to help me stay on track).¹⁶

Overall Diet Quality. To assess overall diet quality, participants responded to an 8-item scale adapted from the American Heart Association (AHA) Dietary Guidelines for Healthy Americans that asked how strongly they agreed [1(Strongly disagree) to 7 (Strongly agree)] with statements such as: “I eat a variety of foods,” and “I consume plenty of vegetables”.¹⁷ Responses were summed (range: 0 to 56) and dichotomized as low (<30 points) or high (≥31 points) overall diet quality.

Fruit and vegetable intake. Participants reported how often they typically consumed fruits and vegetables each week: 0-2 times per week (never/rarely), 3-5 times per week (occasionally), 6+ times per week (often/always).¹⁸ Responses were dichotomized to reflect low intake [never/rarely/occasionally (0)] and high intake [often/always (1)].

Analysis

Statistical analyses were performed using Stata SE 15.¹⁹ Logistic regressions were conducted to examine the associations between the total nutrition knowledge quiz score, perceived barriers, fruit and vegetable consumption, and overall diet quality, controlling for sex, income, and age.

Results

Means, standard deviations, and frequencies among all study variables are presented in Table 1. Most participants reported low weekly consumption (i.e., never, rarely, or occasionally) of fruits (66.9%) and vegetables (61.9%). However, a majority of participants (61.9%) reported a relatively high overall diet quality. On average, participants scored 14.8 (SD=3.4) out of 25 points (i.e., 59.4% out of 100%) on the nutrition knowledge quiz, indicating relatively poor nutrition knowledge in this sample. Participants reported a low number of barriers to healthy eating with the majority (88.5%) identifying 3 or less barriers. The most commonly perceived barrier was that eating healthy “takes too much time” (36.0%), followed by “inconvenient” (27.3%), “costs too much” (27.3%), “taste and flavor” (25.9%), “others in the household do not want to” (22.3%), “I’m not sure how to eat healthy” (17.3%), and “No support system (someone to help me stay on track)” (16.6%). None of the participants in this sample identified “cannot find information in my language” as a barrier.

Table 1	
Characteristics of Sample (n=139)	
Variable	n (%)
Age (years)	
35 years and younger	42 (30.4)
36 years and older	96 (69.6)
Estimated income (annual)	
Less than \$60,000	19 (13.8)
\$60,000 or higher	119 (86.2)
Sex	
Female	109 (79.0)
Male	29 (21.0)
Perceived Barriers (Selected choice)	
I'm not sure how to eat healthy	24 (17.3)
Costs too much	38 (27.3)
Takes too much time	50 (36.0)
Inconvenient	38 (27.3)
Taste and flavor	36 (25.9)
Others in the household do not want to	31 (22.3)
No support system (someone to help me stay on track)	23 (16.6)
Cannot find information in my preferred language	0 (0.0)
Fruit Consumption	
Low	93 (66.9)
High	46 (33.1)
Vegetable Consumption	
Low	86 (61.9)
High	53 (38.1)
Overall Diet Quality	
Low	53 (38.1)
High	86 (61.9)
	Mean (SD)
Nutrition knowledge (Total quiz score)	14.8 (3.4)

Logistic regressions (Table 2) revealed that nutrition knowledge was significantly associated with fruit ($OR = 1.17$ (95% CI: 1.02-1.33, $p = 0.020$) consumption, vegetable consumption ($OR=1.22$ (95% CI: 1.05-1.40, $p=0.007$), and overall diet quality ($OR=1.27$ (95% CI: 1.10-1.49, $p=0.001$)). Specifically, for each one-point increase in nutrition knowledge quiz scores, the likelihood that participants report consuming fruits frequently, vegetables frequently, and a high overall diet quality increased by a factor of 1.17, 1.22, and 1.27, respectively. Cost as a barrier to healthy eating was significantly associated with vegetable consumption ($OR=0.31$ (95% CI: 0.10-0.95, $p=0.040$) such that those who reported cost as a barrier were 31% less likely to report consuming vegetables frequently compared to those who did not report cost as a barrier. Taste ($OR=0.31$ (95% CI: 0.12-0.83, $p=0.019$) and time ($OR=0.37$ (95% CI: 0.14-0.98, $p=0.046$) as barriers to healthy eating were significantly related to overall diet quality,

with those participants indicating taste and time as a barrier were 31% and 37% less likely to report eating an overall high quality diet. Finally, individuals who reported that inconvenience was a barrier to healthy eating, were 40% less likely to report a high overall diet quality, however, this relationship did not reach significance (OR=0.40 (95% CI: 0.13-1.91, p=0.099). Participants who identified “others in the household do not want to” as a barrier were 3.17 times more likely to report better diet quality, but this relationship was also not significant (OR=3.17 (95% CI: 0.92-10.98, p=0.069). No other perceived barriers were associated with vegetable consumption or diet quality. None of the perceived barriers were associated with fruit consumption.

Variables	Fruit, OR (95% CI) Model 1.3	Vegetables, OR (95% CI) Model 2.3	Diet Quality, OR (95% CI) Model 3.3
Age	0.73 (0.28 – 1.90)	0.46 (0.16-1.30)	0.37 ⁺ (0.13-1.09)
Sex	1.10 (0.39-3.10)	1.73 (0.59-5.03)	0.92 (0.32-2.67)
Income	0.50 (0.14-1.73)	2.12 (0.52-8.62)	1.04 (0.26-4.09)
Nutrition Knowledge	1.17* (1.02-1.33)	1.22** (1.05-1.40)	1.27** (1.10-1.48)
I'm not sure how to eat healthy	0.61 (0.16-2.27)	0.36 (0.08-1.53)	0.56 (0.16-1.93)
Costs too much	0.87 (0.35-2.37)	0.31* (0.10-0.95)	0.60 (0.21-1.68)
Takes too much time	0.90 (0.36-2.31)	0.46 (0.17 - 1.23)	0.37* (0.14-0.98)
Inconvenient	0.44 (0.14-1.29)	0.40 ⁺ (0.13-1.19)	0.91 (0.31-2.69)
Taste and flavor	0.87 (0.33-2.29)	1.04 (0.38-2.86)	0.30* (0.14-0.98)
Others in the household do not want to	0.94 (0.35-2.50)	0.53 (0.18-1.56)	3.17 ⁺ (0.92-10.98)
No support system	0.53 (0.15-1.84)	0.70 (0.20-2.39)	0.42 (0.14-1.32)

⁺Symbol indicates level of significance: p≤0.05, ^{**}Symbol indicates level of significance: p≤0.01, ^{*}Symbol indicates level of significance: p≤0.10

Discussion

This study showed that nutrition knowledge and specific barriers to healthy eating are related to the self-reported fruit and vegetable consumption and overall diet quality of Hispanics with high educational attainment. The data show that higher nutrition knowledge is associated with higher fruit and vegetable consumption and better overall diet quality, which is consistent with past research.²⁰ Our findings indicated that higher educational attainment does not necessarily equate to a higher level of nutrition knowledge as the nutrition knowledge score ranged from 7-25 and had an average of 14.8 (SD=3.4), equivalent to a score of 59.2% out of 100%.

Past research has shown that barriers to healthy eating such as time constraints, cost, and taste contribute to the reported fruit and vegetable consumption and overall diet quality of Hispanics.²¹ In this study, only cost was a significant barrier to vegetable consumption, and taste and time were the only significant barriers associated with overall diet quality. Cost was found to be a barrier to vegetable consumption even after accounting for income status. This is surprising because the majority of the participants reported a yearly income of \$60,000 or more, which is more than the median income of Hispanics in Texas.¹⁴ A possible interpretation may include the type of store that participants access for food. Studies have shown that supermarket availability in Hispanic neighborhoods is limited, which not only influences ability to access fresh produce, but also cost as fruits and vegetables in supermarkets tend to be lower than in other locations, such as convenience or corner stores.^{21,22}

The present study's findings also show that taste was a barrier to healthy eating, consistent with other research, highlighting how our food choices are heavily influenced by our preferences, thus informing strategies to improve people's affinity for healthy food.²³⁻²⁵ Although the relationship did not reach significance, participants who reported that inconvenience was a barrier to healthy eating recorded a lower diet quality, which is consistent with previous research.²¹ The marginal relationship between lack of household support and high overall diet quality suggests that participants may not be affected by household members' dietary habits. However, as studies have associated family meals with positive outcomes in youth, the influence of household members may be more strongly felt among younger adults rather than older adults.²⁶ Researchers should examine whether perceived barriers to healthy eating, such as household support, may differ across age groups.

Other studies have identified language, support, and not knowing how to prepare healthy foods as barriers to healthy eating among low-income Hispanics, however, this was not observed in the present study.^{27,28} Participants were highly educated and 97.8% of this sample completed the survey in English. Additionally, current research associates poorer cooking (e.g., chopping, mixing, heating) and food skills (e.g., meal planning, food safety) with less education.²⁹ This suggests that language and not knowing how to prepare healthy foods may not be relevant barriers for this sample. With regards to support, it is important to note that this study did not differentiate between the

types of support (e.g. instrumental, emotional, informational), which may have differential impacts on diet quality.³⁰ Additional research is needed to examine the impact of the different types of support on the diet quality among higher SES Hispanics.

Because none of the perceived barriers measured in this study were associated with fruit consumption and only cost was related to vegetable consumption, this suggests that there are other barriers or variables affecting the diet of higher SES Hispanics that have not been assessed. For example, studies have linked perceived diet quality and availability of cultural food as barriers to healthy eating among low-income Hispanics.³¹⁻³³ Future research should examine the relationship between a wider array of barriers and healthy eating among higher SES Hispanics.

Limitations and Future Research

The cross-sectional nature of this study does not allow for following individuals over time, meaning that we were only able to capture the nutrition knowledge, perceived barriers to healthy eating, and diet of our sample at a particular point in time. Longitudinal research is needed to determine whether the relationships between nutrition knowledge, perceived barriers to healthy eating, and diet among higher SES Hispanics are consistent over time.³⁴

Survey tools used to collect data may be limited. For example, the U.S. Department of Agriculture's (USDA) MyPlate Food Group Quizzes survey did not assess if participants were consuming the recommended servings of fruits and vegetables; instead, they examine the frequency of consumption (times per week).¹⁵ The USDA recommends daily fruit and vegetable intake, so participants who reported that they consumed fruits or vegetables 6 or more times per week were categorized as "high consumption," which provided a general idea of their intake.²

Additionally, adherence to the Dietary Guidelines for Healthy Americans by the American Heart Association was measured using a Likert scale used to assess overall diet quality of the participants.¹⁷ The guidelines were written as "I" statements, and most of the participants reported that they followed them by agreeing to the statements. Interpretation of the guidelines may have been subjective as they did not provide much context (e.g., "I eat a variety of foods,").

The survey's online distribution method and participants' interest may have contributed to the small sample size.³⁵ The measures in this study were included because of brevity, increasing the likelihood that participants would complete the survey. In fact, 81.4% (i.e., 176/216) of participants completed the survey. Although this study's findings were consistent with previous research regarding nutrition knowledge and some of the perceived barriers to healthy eating and diet, they cannot be generalized to other populations; instead, they provide a general idea of participant's diet quality and habits. Future studies should aim to use a validated dietary assessment such as a diet recall or food frequency questionnaire to study diet quality more in depth.

Conclusion

These findings provide insight into factors affecting dietary intake of Hispanics with a higher educational attainment, a seldom investigated sample, and can help inform and tailor intervention strategies for this population. For instance, healthy lifestyle intervention programs may be more effective among higher SES Hispanics if they provide more palatable and healthy recipes that include vegetables, or guides to buying fruits, vegetables, and other healthy foods at a lower cost to enhance diet quality. Larger scale cross-sectional and longitudinal studies are needed to capture a more precise picture of the diet quality among Hispanics with a higher educational attainment and may be a step to deconstructing the diverse US Hispanic population to understand the unique diet-related needs of the different subgroups.

Acknowledgements

I would like to express my deepest gratitude to my mentor and co-author, Dr. Vanessa Errisuriz for providing her knowledge, expertise, and continuous support throughout this process. I would also like to thank Drs. Eric Dieter and Nabeeha Chaudhary for their encouragement and enthusiasm about this project. Finally, many thanks to everyone who participated in this project and expressed their support.

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13. The output for this paper was generated using Qualtrics software, Version current 29 August 2023 of Qualtrics. Copyright © 2020 Qualtrics. Qualtrics and all other Qualtrics product or service names are registered trademarks or trademarks of Qualtrics, Provo, UT, USA. <https://www.qualtrics.com>

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Racialized Tracking: The Widening of the Calculus Achievement Gap for Black and Latinx Students

Jonathon Briones

The University of Texas at Austin

Faculty Mentor: Yasmiyn Irizarry, PhD

Secondary school mathematics plays an important role in aiding students to prepare for the transition to college while also paving the way toward a variety of career paths, notably, careers in STEM. Due to the nature of the prerequisites necessary for a high school student to enroll in calculus, academic tracking has been introduced to structure and tailor a student's academic course load or "track." Tracking is a practice that uses several factors such as teacher evaluation, grades, or test scores to determine suitable coursework given a student's aptitude and ability. However, modern tracking remains inequitable and racialized given its history of racial superiority and eugenics. This form of institutionalized racism has caused many students of color to be filtered out of advanced math coursework which inevitably leads to a lack of diversity in STEM. These factors have led to underrepresentation in courses such as calculus. This research looks to discover the severity of disparity in calculus via data provided by the Civil Rights Data Collection (CRDC) with bootstrap analysis. This study specifically looked at disproportionality rates in calculus enrollment across U.S. schools. It was found that school enrollment and calculus enrollment will not have changed significantly between the 2015-16 and 2017-18 school year, but that the disparity in calculus enrollment for Black and Latinx students has increased, insinuating that the calculus achievement gap exists and is worsening.

Keywords: calculus, tracking, STEM, career placement

Introduction

Math is becoming an increasingly important area of study for individuals wanting to enter STEM-intensive careers in the modern world. Yet mathematics requirements have remained a major issue for students of color in course enrollment and achievement. A popular marker for helping educators, counselors, and parents determine mathematics course placement for students is tracking; tracking divides students based on prior assessment, aptitude, and achievement along with a variety of other potential factors to place them inappropriately challenging courses to meet their abilities. The coursework placed upon a student is generally referred to as a “track.” The widespread implementation of tracking was meant to help educators to provide a curriculum suitable to their students' wants and level of expertise equitably.

On the surface, tracking divides students based on merit and achievement. Since students learn at different paces, it naturally follows that some students will be better prepared for advanced classes while others require on-level or remedial classes. However, tracking's introduction would quickly be racialized in an attempt to segregate more advanced coursework from students of color, specifically Black and Brown students (Tyson 2011). This paper focuses on the effects of racialized tracking on calculus enrollment and the achievement gap among Black and Latinx students in the United States. Specifically, this paper is interested in the severity of the achievement gap in more recent school years and looks at the leading social factors that perpetuate these issues in education such as race. Bootstrap analysis with t-tests is used on the Civil Rights Data Collection (CRDC) dataset which is provided by the U.S. Department of Education to quantify the rate of disparity of calculus enrollment by race between two school years to help answer these questions.

Brief History of Mathematics Curriculum and Calculus

While calculus plays a pivotal role in secondary school mathematics achievement, the course is a recent addition to the curriculum. In the United States, the evolution of mathematics in secondary school began with the introduction of basic arithmetic in the 1700s which lacked precedence early on due to the high regard of Latin grammar schools and a lack of practicality outside of business applications. However, soon after hiring their first mathematics professor, Harvard required proficient knowledge of arithmetic as a requisite for admission. Secondary-level educational institutions at this time served as a means to fulfill college requisites and prepare students for post-secondary education. Naturally, this caused a shift in the curricula with an increase in secondary schools teaching arithmetic and a small decline in ancient language programs in Greek and Latin. Harvard and other higher education institutions continued affecting the curricula of secondary schools indirectly throughout the 18th and 19th centuries. As entrance requirements at Harvard expanded to include algebra in 1820 and geometry in 1844, secondary schools adapted to meet these newly established requisites (Furr 1996). The addition of these courses into the curriculum

marks a significant point of introducing and pushing more advanced topics at earlier levels of education. Furthermore, the effects of college admissions on the curriculum highlight the emphasis on college requirements in secondary school.

As the United States continued to expand and more students enrolled in school, a call to regulate the curriculum ensued. In the 1890s, the Committee of Ten, a group of educators and experts appointed by the National Education Association, sought to help standardize secondary education. They recommended that students take two years of algebra instruction with one year of geometry after the first year of algebra (NEA 1894). This method of instruction forms the basis of many modern secondary school mathematics programs. While the true impact of the committee conference remains unknown, it gives valuable insight into the minds of educators and policy-makers at the time. It should be noted that calculus is never mentioned as a course for secondary education within the summary report of the committee meeting.

Even so, calculus began gaining traction in Western European secondary schools around this time, yet the United States showed no interest in introducing the course into the curriculum. Mathematics education expert, David Eugene Smith (Paris Report 1914) even writes, "Calculus does not figure in the secondary curriculum in the United States; it cannot even be made an elective, since the pupils of the upper classes are very much absorbed in the preparation of college entrance examinations." However, this attitude would quickly change, for in 1922, the National Committee on Mathematical Requirements (NCRM) would go on to recommend that students take calculus for twelfth-year mathematics. The committee understood that there might be controversy after suggesting that a college-level subject be taught in high schools. They argued that the course provides valuable insight especially to students who are not planning to attend college while also being more "attractive" and practical than algebra in application. The committee also mentioned that the course does not replace college calculus and is not targeted for all students, teachers, or schools but merely serves as an elective. A summary report of the 1922 meeting (NCRM 1922) goes on to state, "It is not intended in any direct way with college entrance requirements. The future college student will have ample opportunity for calculus later." Much like the 1890s conference by the Committee of Ten, the impact of this convention is difficult to trace but similarly provides a look into the thoughts of experts at the time. Despite stressing the supplementary nature of secondary school calculus by referring to it as an elective, the recommendation nonetheless underscores the idea of pushing the introduction of more rigorous courses into earlier years. In addition, the introduction of calculus would later culminate in calculus becoming the apex of rigor for high school students.

As the 20th century progressed, the emphasis on improving mathematics education became more critical. After the end of World War II and the beginning of the Cold War Era, the United States emerged as a great power. STEM and national security worked together to devise actions to protect the American ideology of democracy and the free market. In the 1950s, America sat comfortably believing that it had the most advancements and notable prowess in STEM-related discoveries. Even so, the launch of Sputnik I by the USSR challenged this attitude and sent America into a panic. In response, the American government allocated more funds to the education system in hopes that this would increase the number of members in the STEM taskforce. In 1950,

there were less than 500,000 workers in the STEM taskforce, and by the 1980s, this number quintupled with over 2.5 million workers now involved in STEM (STEM ED 2017). Not all STEM subjects experienced significant growth to the same degree, however. For example, biological sciences lacked the funding to grow while precedence was given to physical sciences. In particular, mathematics and technological sciences grew exponentially upon the introduction of computation.

This focus and growth of STEM has led the field to be idealized. The shift in focus for curricula and job outcomes can be seen with the enrollment of mathematics courses in high school. Despite this insurgence of mathematics education and STEM growth beginning in the 1950s, studies show that many students still failed to complete algebra in the 1980s with as many as 30% of students not completing the course (Kanbir et al. 2017). The long-lasting effects of this emphasis on STEM and the standardization of curriculum, however, caused an overall increasing number of students to enroll and complete calculus and other more advanced mathematics courses such as precalculus or trigonometry. A report from the United States Bureau of Labor Statistics (2012) states that, “Among the more recent graduates (who were born in the years 1980–1984), 11 percent completed high school calculus...Among the earlier graduates (who were born in the years 1957–1964), just 2 percent completed high school calculus...” Another study says that the number of students taking calculus in high school during the 1972 school year was nearly quadruple that of the 1960 school year (Zuccheri et al. 2013).

This newfound accessibility to calculus and STEM jobs remained largely open for White students. Black and Latinx populations have remained historically underrepresented in STEM and in high school calculus. This underrepresentation finds itself present in the modern day largely due to the presence of racialized school structures that maintain an achievement gap (Fry 2021, Landivar 2013).

History of Tracking and Racialized School Structures

While the exact origins of tracking are unknown, Todd McCardle (2020) argues that early forms of tracking and academic tracks existed during the Reconstruction era as a means to racially segregate students in the South. Southern Black citizens generally had two track options in regard to education. One focuses heavily on a formal liberal arts and science education, while the other focuses on an industrial education promoting consistent work habits, manual labor, and Christian ideals. The latter is more widely known as the Hampton-Tuskegee Model.

Due to the nature of segregation in the South, many schools for Black students relied on funds from Northern industrialists and missionary philanthropists. These groups had conflicting interests where the industrialists often funded schools following the Hampton-Tuskegee model to limit opportunities for Black students and maintain a workforce for their industrial factories. On the other hand, missionary philanthropists sought to educate and elevate the status of Black citizens with a liberal arts education. The industrialists backing the Hampton-Tuskegee model sought to push out liberal arts

fundings by organizing together, severely limiting the tracks available to Black students. This act inhibited the social mobility of Black citizens while also reinstating the racial hierarchy. McCardle writes, "...as freed southern Black citizens gained the illusion of the right to a public education, White lawmakers found ways to maintain racist structures within schools that would continue to halt racial progress." Therefore, since the inception of a possible educated Black population, White citizens in power placed barriers to limit their social and educational prospects.

On the other side of the country, the sudden influx of immigrants to the Northern United States during the early twentieth century caused White citizens in power to act in order to maintain racial superiority. While the South continued with segregated education and schools as mentioned previously, the North implemented tracks of their own to better organize and provide instruction suitable to a student's aptitude (McCardle 2020). The track placed upon each student largely depended on IQ tests. By the 1930s many schools had begun using IQ tests to gauge students' abilities, and by 1950, most schools fully integrated the use of these tests for track placement (NASSP 2006). McCardle again examines the integration of these tests, which while equitable in the minds of White educators, "...race remained central to the discussion of which academic track students would be placed in..." These exams along with standardized tests and college entrance exams have histories tied to eugenics, the pseudoscience used to validate the continued inequitable treatment of citizens not of Western European origin. With these crucial exams in place, educators and administrators had the means necessary to alter the academic pathway and thus career outcomes for students of color.

IQ tests and racial segregation continued into the civil rights movements of the mid to late twentieth century. The court ruling of *Brown v. Board* desegregating schools caused extreme changes and reactions in the educational systems of the states. Many schools, in response to racial desegregation, either closed, opened White-only private academies, or reallocated public funds to primarily White educational institutions. Other schools established racialized tracking to satisfy building-level desegregation but continued with classroom-level segregation, thus creating a long-lasting academic achievement gap for students of color. The countermovement of *Brown* matched the strength and backing of the opposing side leading only to a surface level change within many schools. Education expert and sociologist Karolyn Tyson (2011) hypothesizes that racialized tracking exists to conserve the link between White students and academic achievement after the *Brown* decision. Thus, tracking as a school structure has a history linked to maintaining the racial hierarchy and providing advantages to White students.

The Achievement Gap in the 21st Century

Calculus is among one of the most notable courses a student can take during their secondary education due to the level of rigor and necessary prerequisites. Many students do not get the opportunity to enroll in the course before graduating. However, despite the potential setbacks to prevent enrollment into calculus, the course has

steadily grown over the past few decades. In fact, more high school students are enrolled in calculus than first year college students taking calculus for the first time (Bressoud, 2017).

Expectedly, researchers, using the National Center for Education Statistics' High School Longitudinal Study of 2009 (HSL:09), found that a major predictor to tell whether a student would take calculus was the grade in which they first took algebra. 41% of students who took algebra prior to freshman year would go on to take calculus as opposed to only 5% of students who took algebra during freshman year (Bressoud, 2017). Moreover, McCarroll and Walston (2010) have reported that Black and Latinx students have much lower rates of completing algebra by ninth grade, less than 20% and 38% respectively, compared to their White and Asian peers, 45% and 67%. These achievement gaps continue to grow as students' progress through high school (Irizarry 2021). Bressoud (2017) notably states,

“When we consider that there are also large differences associated with race and SES [Socioeconomic-Status], the findings support, with very few expectations, the notion that there is a broad de facto system of tracking in U.S. high schools that may contribute to widening achievement gaps in mathematics and differential access to STEM fields.”

Therefore, recent research suggests that there does exist racialized tracking that inhibits the achievement of students of color. Consequently, the lack of proper mathematical training for many students of marginalized backgrounds causes issues in STEM diversity, educational attainment, and career opportunities.

The achievement gaps onset by tracking cause students in lower tracks to receive less resources and critical learning opportunities. Carbonaro (2005) even suggests that students in higher tracks tend to “exert more effort” than students in lower tracks due to the experiences provided by these extra resources and increased intellectual stimulation presented by the rigor. He goes on to further state, “...when comparable students in lower track classes try as hard as students in higher track classes, they still learn less than they would in the higher track.” Evidence suggests that lower track classes are generally more comprised of marginalized students such as students of low SES and students of color (Pootinath et. al 2011). This continued placement of these students in lower tracks affects their education and post-secondary school outcomes.

For example, a study has found that specifically Black and Latinx students require more remedial education compared to their counterparts when in college (Solis 2018). Solis (2018) states that Latinx students did not meet the minimal standards set by remedial mathematics courses to truly advance into higher level college courses. She mentions that mathematics course requirements for degree-seeking students of marginalized backgrounds act as a gatekeeper preventing these students from graduating. In response, colleges are investing in developmental math courses and co-requisites to help students to graduate and continue their education. This implies that these students are not receiving math training in secondary school comparable to their White and Asian counterparts. In addition, this solution only acts as a band-aid to the real situation of insufficient mathematics instruction but exemplifies that secondary

school mathematics can even alter the outcomes of students past high school. Specifically for students interested in STEM, this lack of mathematics rigor and training can be detrimental to their chances of succeeding in college.

The importance of calculus, especially for these students interested in math-intensive fields of study cannot be understated. Calculus acts as a funnel into the STEM pipeline and helps provide students with a glimpse into the nature of post-secondary mathematics. However, some research suggests that there does not exist a link between encouraging students to take calculus and the expansion of the STEM pipeline (Bressoud 2017). Nevertheless, the course continues to grow in popularity but then why should students take calculus if the benefits of the course are unpredictable? Many students who proceed to take calculus whether Advanced Placement (AP), International Baccalaureate (IB), or Dual Enrollment (DE) may not even claim college credit, take the corresponding course exam, or earn a good grade in the course. Yet the value of taking the course should not be emphasized so heavily on these metrics but rather on how the students have learned in regard to problem-solving skills and mathematical aptitude. A study by Sadler and Sonnert (2014) found that students who may not be successful according to test scores or grades still benefit from the course. They concluded that,

“Even students with relatively weak preparation in mathematics appear to benefit from taking a calculus course in high school...the course can bolster their understanding of concepts and build skills that will be used later in college calculus.”

Thus, quality high school calculus courses can ease the transition to college-level math courses for incoming students. In fact, rough estimates from Bressoud (2017) predict that around 150,000 out of the 800,000 students who take AP Calculus AB will bypass Calculus 1 and take Calculus 2 in college with success rates similar to those who took Calculus 1 at the same institution. Another 150,000 students will go on to take retake Calculus 1 earning an A or B.

Additionally, calculus is commonly seen as a rigorous course making students who take the class look much more competitive on applications, thus acting as a “pseudo-requirement” for many elite universities and STEM programs. For instance, over 90% of Harvard freshmen took AP Calculus AB or higher in 2021, even though in 2014 around half of schools did not offer the course according to the United States Department of Education’s Office of Civil Rights (2014, Harvard Crimson, 2021). Harvard and many other universities insist that calculus is not a requirement and value the rigor of a student’s high school academics. This implies that a student should take the most challenging courses offered at their school in order to be competitive for admission. This stance, however, remains inequitable as students experience unequal access to advanced academic courses.

Firstly, many of these universities still search for advanced coursework such as AP, honors, IB, or other highly regarded course distinctions to gauge a student’s college

readiness. Nevertheless, many secondary schools can have limited course offerings, especially schools with primarily minority students or students of lower socio-economic status. On average, Harvard students took eight AP classes, but only 80% of schools in the country offer AP courses on site, and, of the schools that offer AP, on average only eight courses with an AP distinction are offered (Belasco 2021).

Secondly, this viewpoint still fails to acknowledge the potential of racialized tracking even within more prestigious schools such as magnet schools. Magnet schools can often segregate class tracks with more advanced courses consisting of primarily White students while lower tracks are composed of students of color. Jeanie Oakes (1985) agrees saying, “classroom segregation does exist in many schools that are racially balanced at building level... and evidence suggests that magnet schools often operate racially imbalanced classes.” Kimberley West (1994), specifically, found that magnet schools “exacerbate or even cause in-school segregation.” Thus, even if a school is to offer more advanced coursework students of color can be filtered out of these courses due to the institutionalized racist structures of their schooling.

Specific instances of racialized tracking can be seen through the research studies done by Karolyn Tyson (2011) involving Black students in North Carolina. She dismissed the notion of Black students being disinterested in academic achievement while also uncovering the origin and meaning behind the phrase “acting White.” Students develop this idea because school structures implant that academic achievement is an inherently “White” characteristic through the implementation of racialized tracking. The slur “acting White” acts to offend high achieving students of color since they are typically involved in class with a White majority and often associated with White classmates. Many people then attribute the phrase and its origin as the cause for the achievement gap. This idea spreads the belief that Black and Latinx students are disinclined for academic achievement as to not be considered or treated as White by other Black and Latinx students. However, Tyson postulates that the opposite is true; that the achievement gap caused by racialized tracking leads students to the notion that academic achievement is White. Tyson states, “It [Tracking] maintains a set of conditions in which academic success is linked with Whites. Students equate academic achievement with whiteness because school structures do.”

Similarly, racialized tracking and other systemic racist structures emphasize the idea of “brilliance” where students believe that math ability is innate as opposed to learned or developed. This idea of “brilliance” emphasizes how White male peers are often attributed to being brilliant compared to female and minority students (Chestnut, et.al 2018). When brilliance is emphasized, students begin to disconnect from the subject. They believe that since they lack the natural ability to understand then there’s no point in focusing on improving. Thus, the idea of natural mathematical aptitude leads many to believe that they are not suitable for math, and, therefore, they stray away from math intensive fields. The ideas of “brilliance” can infiltrate the minds of students as early as six years of age. On the other hand, the origin of the phrase “acting White” is difficult to trace since younger students tend to avoid the topic of race during interviews. However, although rarely mentioned, Tyson found that students are acutely aware of race at younger elementary ages (Tyson 2011). These two ideas imply that students

can begin to disconnect from a subject and uphold the principle of academic achievement being White at a young age.

Methods

The analysis reported used data from the United States Department of Education's Civil Rights Data Collection, also known as the CRDC. The two most recent datasets, the 2015-2016 and 2017-2018 school years, were used. The data provide large-scale information on every school in the United States containing entail regarding enrollment, course offerings, school status, and much more. Also, it calls on schools to extensively check the information provided to the CRDC for complete accuracy. The data are generally collected every two years, but the Covid-19 pandemic disrupted the pattern, and the next available dataset will be made with data from the 2021-2022 school year. The datasets closely following the 2020 school year are likely to have enrollment changes influenced by the pandemic and should thus be considered with some caution. The CRDC datasets used are well-suited for measuring disparity in calculus given the recency, nation-wide enrollment statistics for calculus and students, and available selection criteria for better specifying schools of interest.

This research will look over the general trend in disparity for calculus enrollment of Black and Latinx students using bootstrap analysis. The use of bootstrap analysis was chosen to normalize data and be able to better compare differences between the two school years through the use of t-tests. The inclusion criteria for schools to be in the bootstrap sample was carefully considered. First, schools must offer at least one calculus course since calculus enrollment is the main point of interest for this study. Secondly, schools must only teach 9-12 or 10-12 because, while the CRDC datasets contain much information on schools, it does not report enrollment numbers by grade. These grade levels are better representative of the calculus-taking population at schools and leave much less room for error in regard to assessing the potential calculus-taking population. Next, schools could not classify as virtual, alternative, institutions for special education nor institutions labeled as a juvenile justice facility. These types of schools operate differently from traditional high schools with different expectations of education and discipline. Finally, schools must have at least ten Black and ten Latinx students since these are the populations of interest and a baseline is required. It should also be noted that schools from the District of Columbia and Puerto Rico were also excluded. The District of Columbia is an autonomous region and not a state while Puerto Rico is also not classified as a state and was not reported for both school years.

After running the inclusion criteria for my sample, the 2015-2016 school year had 6305 schools and the 2017-2018 school year had 5355 schools. Next, 1000 bootstrap samples with replacement were created from these resulting school year samples. Each bootstrap sample with replacement had 5000 entries since this is roughly the number of schools in each school year. The mean of a bootstrap sample instance was calculated for each numeric variable of interest such as calculus enrollment, total school enrollment, Black and Latinx enrollment, and so on and so forth. After the mean was

calculated for each numeric variable, the resulting sample was added to the distribution of the final bootstrap sample until 1000 samples was reached. Bootstrap sampling normalizes data so that it can better be manipulated for statistical inference and meet the model assumptions. A series of t-tests were then performed comparing the means between the two school years to better understand the differences and changes over time.

A specific metric of interest was the Disparity Index (DI) which is adapted from Karolyn Tyson, William Darity, and Domini Castellino’s “It’s Not ‘A Black Thing’: Understanding the Burden of Acting White and Other Dilemmas of High Achievement”. DI was used to measure the overall disparity at a school for Black and Latinx enrollment in calculus. Specifically,

$$\text{Disparity Index} = \frac{\% \text{ Demographic Enrolled in Calculus} - \% \text{ Demographic Enrolled in School}}{\% \text{ Demographic Enrolled in the School}} * 100$$

Using both the enrollment of calculus and school enrollment, DI is a reliable measure of tracking disproportionate rates of calculus enrollment at a particular school. Scores closer to 0 indicate that the students are well represented in calculus. A score close to -100 indicates that the population is extremely underrepresented, and any score greater than 0 implies that the specific population is overrepresented. However, DI fails to consider the size (N) of a calculus class. This means that relatively small changes in enrollment over the two school years could appear to create a big change in DI. For example, if a school only had around 10 Black students with 1 enrolled in calculus and a negative DI score then the following school year had 10 Black students but with 3 Black students now enrolled in calculus. The DI would drastically change due to the higher enrollment of Black students in calculus but realistically, these schools with changes like this have likely not developed new initiatives to get more underrepresented students in advanced math courses; rather, more of these marginalized students happened to enroll in calculus for this particular school year.

Consequently, a metric adopted from the IDEA Data Center’s “Methods for Assessing Racial/Ethnic Disproportionality in Special Education” would be used to consider the enrollment of calculus to better understand the changes over these school years. A standard error equation would be taken from the E-formula to help better represent the underlying calculus-taking population at a school. This is known as the DI Z-score and is calculated as:

$$DI Z - score = \frac{\% \text{ Demographic Enrollment in Calculus} - \% \text{ Demographic Enrollment in School}}{\sqrt{\% \text{ Demographic Enrollment in School} * \frac{100 - \% \text{ Demographic Enrollment in School}}{\text{Total Enrollment in Calculus}}}}$$

Now with the DI Z-score, enrollment is taken into account, and thus standardized to better compare the changes between each group over the two school years.

Results

Table 1 and 2 show the notable descriptive statistics of the 2015 and 2017 populations. Since the populations are not normally distributed, the median is discussed in the upcoming paragraphs.

Now, overall enrollment only slightly varied between the 2015 and 2017 school years. White students experienced a small decrease in percentage enrollment, a 2.44% change. Black students remained nearly identical with a -0.01% change while Latinx students are the only demographic to increase with a 2.15% positive shift. For the total enrollment, there was a decrease from 1374 students to 1346 students which amounts to a -2.01% change.

Secondly, Figure 4 provides a percentage breakdown of the predominant demographic for each school included in the school year. The overall makeup of schools is largely similar between the years as none the groups experienced a change greater than 2%. Specifically, predominantly White institutions (PWI) and predominantly Black institutions (PBI) experienced a difference of 2% and 1% respectively. On the other hand, predominantly Hispanic institutions (PHI) and institutions labeled as Other, which could include minority majority schools or schools with a predominant population such as Asians, had an increase by roughly 2% and 1%. Therefore, the populations between the two school years are largely similar in demographics and enrollment.

Thirdly, despite past research suggesting that calculus continues to grow in secondary schools, the total enrollment in calculus would decrease from 51 students to 49. Furthermore, the percentage of students enrolled in calculus also dropped from 3.97 to 3.86. In spite of the overall decreases, calculus classes appear to be staying stagnant more than anything. Additionally, for White students the median calculus enrollment percentage did not change over the two years (62.5%). However, for Black and Latinx students, calculus percentage enrollment decreased by 0.89% and 0.07%.

Lastly, Table 5 shows the differences in disparity between the two school years after t-tests were conducted on the bootstrap samples. Black and Latinx students both decreased in DI by 8.83% and 11.19% respectively which means underrepresentation worsened for these groups. The DI Z-score for Latinx students confirm this finding with a decrease of 0.08. On the other hand, the DI Z-score for Black students increased meagerly by 0.02. Meanwhile, White students experienced growth in both DI and DI Z-score with a 2.74% rise and a substantial 0.36 improvement. This implies that White students are becoming increasingly overrepresented in calculus.

Table 1. Means and Standard Deviations for Variables in Analysis 2017-2018 School Year (N = 5355)

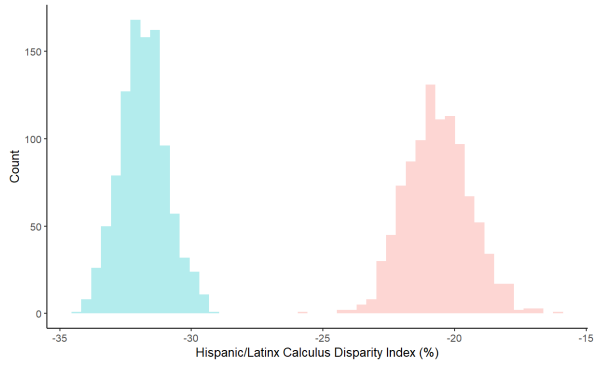
<i>Variable</i>	Mean	Median	SD	High	Low
<i>Enrollment</i>					
Total Enrollment	1448.39	1346	763.06	5838	76
Total Calculus Enrollment	79.97	49	92.69	1043	1
<i>% Enrollment</i>					
% Hispanic Enrollment	24.83	15.42	23.8	98.24	0.68
% Black Enrollment	16.59	8.92	19.49	97.02	0.48
% White Enrollment	48.68	52.27	28.86	95.46	0.09
% Calculus Enrollment	5.5	3.86	5.18	44.99	0.05
<i>Calculus Enrollment</i>					
Total Hispanic Calculus Enrollment	13.25	4	28.73	527	0
Total Black Calculus Enrollment	6.03	2	14.78	395	0
Total White Calculus Enrollment	45	24	59.12	835	0
% Hispanic Calculus Enrollment	18.44	8.7	23.09	100	0
% Black Calculus Enrollment	10.4	3.5	17.89	100	0
% White Calculus Enrollment	55.39	62.5	30.74	100	0

Table 2. Means and Standard Deviations for Variables in Analysis 2015-2016 School Year (N = 6305)

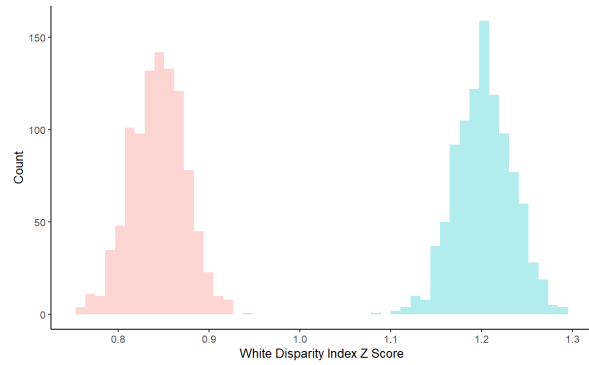
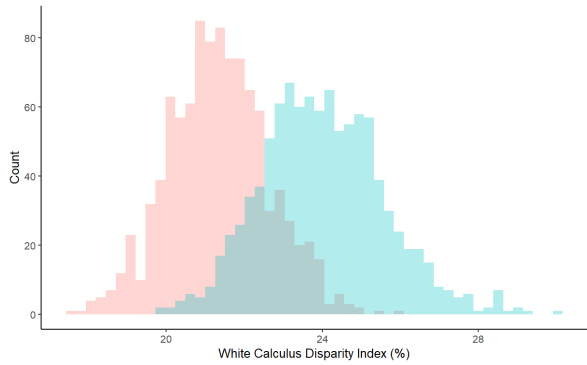
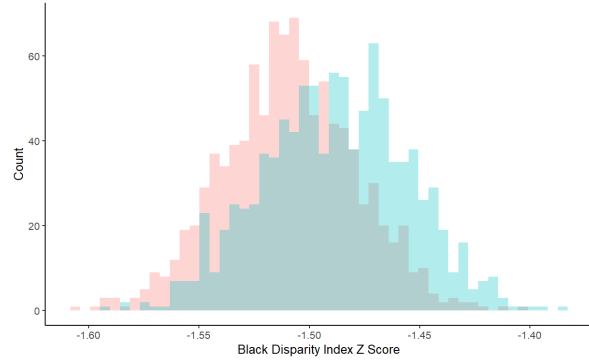
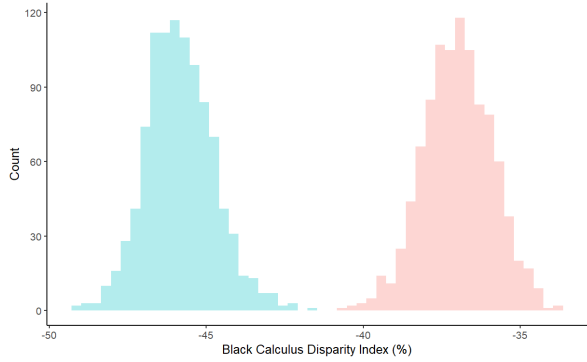
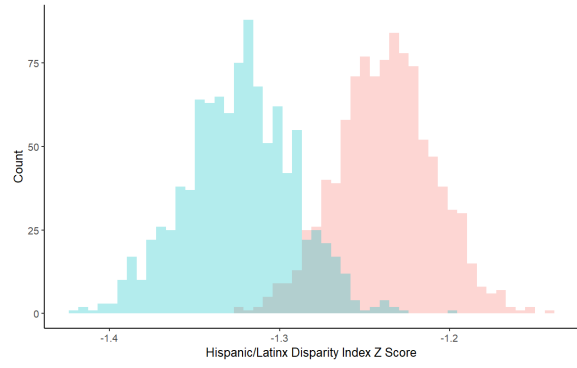
<i>Variable</i>	Mean	Median	SD	High	Low
<i>Enrollment</i>					
Total Enrollment	1459.58	1374	741	5533	60
Total Calculus Enrollment	80.92	51	89.37	854	2
<i>% Enrollment</i>					
% Hispanic Enrollment	23.17	13.27	23.48	98.38	0.72
% Black Enrollment	16.87	8.93	19.68	97.55	0.31
% White Enrollment	50.31	54.71	28.81	97.53	0.15
% Calculus Enrollment	5.52	3.97	5.01	54.12	0.08
<i>Calculus Enrollment</i>					
Total Hispanic Calculus Enrollment	13.2	4	29.82	586	0
Total Black Calculus Enrollment	6.16	2	15.03	421	0
Total White Calculus Enrollment	45.18	25	57.23	817	0
% Hispanic Calculus Enrollment	17.36	8.77	21.68	100	0
% Black Calculus Enrollment	10.59	4.39	17.1	100	0
% White Calculus Enrollment	55	62.5	29.57	100	0

Figure 3. Changes in DI and DI Z-score for Hispanic/Latinx, Black, and White Students

Changes in Disparity Index (DI)



Changes in Z-score of Disparity Index (DI)



School Year

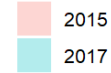


Figure 4. Breakdown of Institution Type for 2015 and 2017 Populations

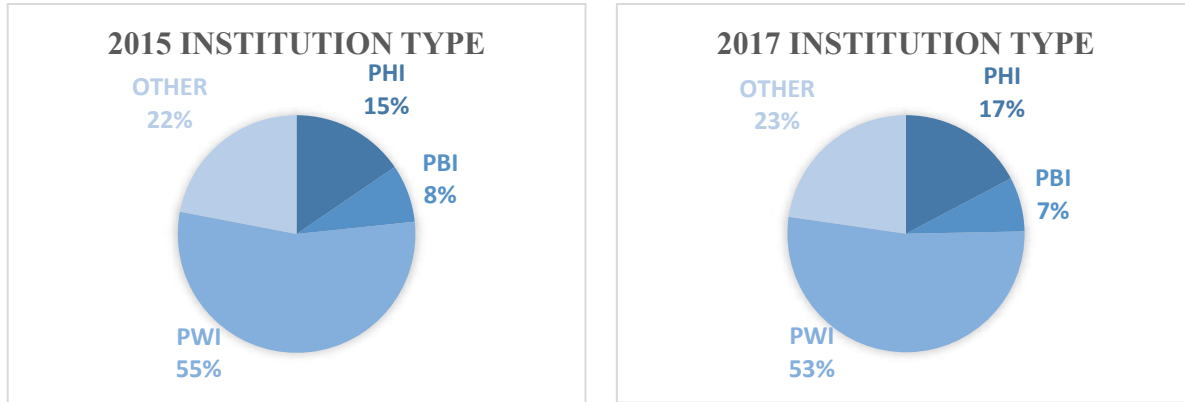


Table 3 Significant Differences between the 2017-18 and 2015-16 Bootstrap Samples from t-test

Variable	2017 Mean	2015 Mean	Difference	Std Error	Significance
<i>Disparity Index (DI)</i>					
Hispanic/Latinx DI	-31.83	-20.64	-11.19	0.048	p<0.001
Black DI	-45.83	-37	-8.83	0.049	p<0.001
White DI	24.09	21.35	2.74	0.064	p<0.001
<i>Disparity Index (DI) Z-score</i>					
Hispanic/Latinx DI Z-score	-1.32	-1.24	-0.08	0.0013	p<0.001
Black DI Z-score	-1.49	-1.51	0.02	0.0014	p<0.001
White DI Z-score	1.2	0.84	0.36	0.0014	p<0.001

Discussion

Limitations and Future Studies

While the CRDC datasets used are incredible pieces of information, they are limited in the information they contain. As mentioned previously, they do not provide info on enrollment numbers by grade level. This severely limits the number of schools that can be included within the sample since K-12 institutions will have inaccurate values for the proportion of students taking calculus given that students in grades K-8 will be included in the total. Generally, students in grades 9-12 are considered to be the potential calculus taking population. Secondly, these are publicly available versions of the dataset; therefore, values are occasionally truncated to avoid potential identification of individuals. These truncated values yielded impossible results at times. For example, a school was identified as having more Asian students enrolled in calculus than Asian students enrolled at the school. This entry was removed from the populations, but it is possible that truncated values such as the number of individuals at a school influenced the results. Precautions such as the minimum enrollment requirements were used to help offset any anomalies.

Lastly, these results are an overview of the general trends within calculus enrollment over two school years. Specifics as to the source of the continued underrepresentation of Black and Latinx students will require further inquiry. Additionally, the CRDC has previous datasets such as one for the 2013-14 school year that could better shape the overall general trend of demographic representation in calculus and how it might fluctuate over time. Finally, a look at how specific schools and policies have created more equitable environments might help educators better understand inclusive practices that aid Black and Latinx students.

Implications

This study is one of the first to explore the on-going underrepresentation of Black and Latinx students in secondary school calculus using a nation-wide dataset along with looking at the potential causes and effects of this continued marginalization. Notable, racialized tracking appears to be how many educators and schools perpetuate and maintain a “racial hierarchy” within their schools. While previous studies have emphasized the continued placement of oppressed populations in lower academic tracks, this study specifically looked at the disparity, its intensity, and change over time within calculus focusing on the comparison among White, Black, and Latinx students. These findings help researchers understand the severity of this issue and advance the knowledge of racial inequalities in course accessibility for U.S. high schools.

Firstly, calculus courses in high school have remained relatively stagnant over these school years. Despite general consensus that calculus continues to grow as a course, these results reveal that for this population of schools calculus enrollment remains consistent. This could be due to the expansion of calculus alternatives such as statistics. With the rise of new areas like data science, statistics plays a vital role for the development of students interested in this field. Additionally, data literacy is an

important skill especially for students interested in non-math-intensive pathways that a course in statistics can supplement. Even though this can explain some of the variation in student course enrollment, Black and Latinx students still remain inequitably underrepresented in high school calculus. For example, previous research even suggests that school staff and faculty can, knowingly, advise or place students in coursework not suitable to their level of understanding in manners that exacerbate social stratification and inequality (Lewis and Diamond 2015).

Next, analysis of the 2015-16 school year reveals that compared to 2017-18 school year calculus courses are more representative of the school's overall demographics. Changes in disparity index showcase that the underrepresentation for Black and Latinx students increased, and that the overrepresentation of White students also grew. Most notably, the changes in the disparity index Z-score demonstrate the extremity of the inequal access to calculus. While Black and Latinx students stayed relatively stagnant, White students in calculus had a substantial increase. Given the abnormal growth for White students, this also implies that the achievement gap for calculus continues to widen as marginalized students appear to be experiencing more barriers to access calculus. Despite general upwards trends in college enrollment for both Black and Latinx students, these populations remain historically underrepresented in STEM with much lower rates of retention compared to their White and Asian counterparts. With this continued inequal access to high school calculus and other more advanced courses, it is unlikely that these conditions will improve. In general, secondary school mathematics acts as the critical point for the quantitative skills of students and pique interest in the STEM field. However, barriers such as racialized tracking inhibit the development of oppressed students. The widening of the achievement gap provides evidence that supports the idea that course placement remains inequitable with White students being provided with more vital learning opportunities for advancement compared to their Black and Latinx peers. In the end, the effects of racialized tracking impact more than secondary school but also quality of life and post-secondary outcomes.

Conclusion

This study reveals a grave pattern within the growing achievement gap and inequitable course enrollment for high school calculus. This and prior research show evidence that there likely exists an underlying school system that serves to limit the educational opportunities for advancement for students of colors, more commonly known as racialized tracking.

Even with growing initiatives to get more marginalized students in higher education and STEM, more research is needed. A closer look into how schools are currently alleviating the issues of racialized tracking could help benefit the knowledge behind these racist school structures to help equitable manage these students. With this in mind, policymakers and educators must generally recognize how the current status of schools perpetuates the idea of racialized tracking along with recognizing the limitations

and effects of their personal biases. Additionally, given how early students begin to associate education with Whiteness and aptitude, primary school educators must emphasize the rejection of these thoughts. Meanwhile, secondary school teachers should reinforce the importance of education and intervene when students are being treated inequitably. Also, counselors should thoroughly educate students on the options available to them granted by the school along with a basic understanding of the associated post-secondary outcomes. Racial and SES inequality will persist but with a comprehension of the systems that bar opportunities from marginalized students the effects can be mitigated.

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Picking Professionalism: The Professionalization of Black Women in Predominantly White Settings.

Tiara Conley

The University of Texas at Austin

Faculty Mentor: Keffrelyn Brown, PhD

In recent years more attention has been placed on Black women and the challenges they encounter around professionalism in work and school spaces. These challenges often focus on how Black women present themselves in white-dominated settings, including their choices regarding physical appearance, body language, and attitude. Existing literature from my recently conducted literature review identified four key themes of: *Perspectives about personal and professional identity*, *Perspectives on code switching as professional practice (Conformity and Resistance)*, *Perspectives on Eurocentric and Afrocentric hairstyles*, and *the Conflicts/paradoxes in Black identity development*. Drawing from theories of Black Feminist Thought, Intersectionality, Double-Consciousness, and Cultural capital, my qualitative case study examines how Black women develop and balance their personal and professional identities. The question for this project is, 'How do Black women navigate and negotiate their personal and professional identities in predominantly white settings?' In this study, I interviewed 3-4 Black women between the ages of 18-22 on their experiences with professionalism in predominantly white settings. All things considered, this project emphasizes the importance of identity construction and its influence on the career performance and trajectory of Black women.

Introduction/Background

In this research project I will be exploring the concept and practice of professionalism and the impact that it has on Black women who pursue higher education at predominately white institutions. I think this topic is important to focus on because the strong link that professionalism has to the 'Dominant' culture facilitates subtle acts of assimilation that are contradicting the Black identity. That 'Dominant' culture deals with embodying 'Whiteness' and Black Americans in particular face the

most hardship with assimilation that occurs in professionalism because of the direct clashes of physical appearances and other cultural characteristics associated with the Black identity. Therefore, this writing is heavily dominated by literature that focuses on interpretation of identity in terms of physical and psychological orientation. Another reason as to why I am interested in the complexities of the topic is because these social constructs influence the ontology of individuals in this group causing them to struggle with their professional development. This is because there hasn't been an opportunity to explore the concept of a professional identity without the negative cultural restrictions that come from Black stereotyping. In contemporary society, the norms for Black women in professional spaces are more relaxed than they were before signifying that there has been some progress in addressing this difficulty. Based on data from the National Center for Education Statistics, 'Black women have been obtaining degrees at a highly consistent rate for the last eight years and counting' (Davis, 2020). This acquisition of ascribed status makes it possible for Black women to achieve social and economic mobility. An example of this would be the practice of exhibiting 'the accumulation of knowledge, behavior, and skills, that a person can tap into to demonstrate one's cultural competence and social status', otherwise known as Cultural capital. (Bourdieu, 1979) The presence of Cultural capital is an expectation that comes from the 'Dominant' culture that can be displayed through the personal embodiment, physical objects, and institutional privilege. This can be challenging for Black Women in particular because of the marginalization of their intersected identities. The symbols, ideas, taste, and preferences of Black Women do not inherent institutional value, therefore this drawback that derives from this personal identity is the basis in which Black women struggle with professional development.

In this case, I assess academic settings as it is one of the primary institutional environments in which professional development takes place. So how does a Black woman navigate the challenges that come with professionalization?

Literature Review

In this manuscript I provide a review of existing literature surrounding the identities of Black Women in professional settings. I present the findings from this review surrounding four cross-cutting themes. (1) Perspectives about personal and professional identity; (2) Perspectives on code switching as professional practice (Conformity and Resistance); (3) Perspectives on Eurocentric and Afrocentric hairstyles; and (4) Conflict/Paradoxes in Black identity development.

Perspectives about personal and professional identity

The literature surrounding personal and professional identity notes that they are two of the same things, meaning that they are attached to each other. For example, Evetts (2013) argues in her literature review about the value and ideology of professionalism that, "Professionalism represents a distinctive form of decentralized

occupational control and regulation which constitutes an important component of civil society.” (pg.8) To reach that point of civic engagement, you must have successfully created your professional identity meaning that you have acquired the skills and credentials needed to be a specialist in a desired area or field. In this case Black people cannot do that separately from their cultural identity because of motions of stigma, stereotype, and anti-Blackness. Slay & Smith (2011) developed a model of professional identity construction to explain the process of Black professional identity development. This model suggests that early socio-cultural influences and professional experiences are put together in describing professional development for Black people, more specifically Black women. This never-ending process leads into a period called ‘task redefinition’ (profession, stigma, and self), acknowledges the dimensions in which the nuances of personal and professional identity development exist. The first act of acceptance is a crucial practice in this sector of the identity curation because in order to solve the problem, you must first identify it. In all, Black professional identity development is determined upon the judgment of the Black identity, which has a long history of negative understanding and doesn’t fit into (white) professional spaces.

Perspectives on code switching as professional practice (Conformity and Resistance)

Code Switching operates as an adaptation tactic to survive in professional situations. McCluney (2021) found in their article about how racial code switching is perceived professionalism in the workplace that ‘code switching was seen as more professional than non-code switching because sounding like a Black person deviates from the norm of whiteness.’ In addition to that, the author claimed that code switching is an impression management strategy for Black people to navigate professional work environments. A participant in Ferguson & Dougherty's (2022) study on the paradox of the Black professional expressed that, “We must code switch. You’ll hear some people talk about my ‘White voice.’ That’s the real thing in Black Professionalism because you don’t want to come off to other people as ignorant. That’s a part of being professional, my White voice.” (pg. 17) This excerpt is significant because it highlights the cultural expectation of changing your voice in Black professionalization. These authors' findings also led them to the claim that their participants engaged in the process outcome of a vicious cycle called *cultural labor*. Cultural labor reflects the ongoing challenges of conforming to or resisting expectations of whiteness in the meanings, performances, and embodiment of professionalism at work. (Ferguson & Dougherty, 2022) Code switching as a professional practice is a construct that facilitates cultural labor whether it is being performed (Conformity) or not performed (Resistance). This professional practice is out of character (abnormal) and causes psychological stress that harms Black professional development.

Perspectives on Eurocentric and Afrocentric hairstyles

Hair is an aspect of Black identity that has a negative stigma because its difference in physical appearance affects the ethos. Opie & Phillips (2015) found that Afrocentric hairstyles on Black women were rated more dominant which is not favorable to professional standards. Dominance refers to acts of agency that gives someone the

opportunity to control their fate. Black women with Afrocentric hairstyles or 'natural' hair having more agency shows understanding of their personal identity. This type of understanding of personal identity is what causes friction or conflict in the professional world because of the contrast to Eurocentrism. The purpose of this article was to contribute to research by examining how both Black and White evaluators respond to displays of Black women's dominance/decision to wear Eurocentric or Afrocentric hairstyles. In turn, the selected hairstyles are linked to reactions to the woman's behavior in the workplace. Dawson, Karl, & Peluchette (2019) found in their interview study on natural Black hair bias in the workplace that 'individuals' thoughts and feelings about their hair are influenced by labeling theory, pressures to conform, and in turn influence feelings about their self-identity which has significant ramifications for the workplace.' It has been argued that hair has an influence on how Black women see themselves. Donahoo (2022) claimed that racialized sexism affects even the most confident and professionally competent Black women through basic hair styling decisions. This study of 22 Black women found that racialized sexism affects the hair styling decisions of Black women when seeking professional employment. These hair styling decisions determine whether or not they should alter the natural state of their hair in another attempt to assimilate for an opportunity of better life chances. The first attempt of this is with code switching, something as small as tone of voice plays a major role in professional acceptance. Furthermore, the authors explain that there is not enough legal support for wearing natural hair in the workplace. A well known example of this is the Crown Act, otherwise known as Senate Bill 188 that was passed into law in 2019. Creating a Respectful and Open World for Natural Hair is a legal support to protect Black women from hair discrimination that may come up in many nonBlack settings. The representation of Afrocentric hairstyles is important in professional identity development because it is dependent upon how well Black people manage their personal identity. This is just another way that the standards of professionalism conflict with Black professional development.

Conflict/Paradoxes in Black identity development

It could be difficult for individuals with a Black identity to develop their professional identity because of the influence that they have on each other as described in the themes of this literature review. Slay & Smith (2011) study found that Black journalists faced situations where there was difficulty in decision-making regarding journalism matters because of their stigmatized cultural identity. This supports their claim of the influence of being an 'outsider' on their professional careers. Stigmatized cultural identities facilitate friction in the process of professional development because it runs contrary to the expectation of 'whiteness' that is embodied in professional standards. Another connection to the Black professional is the theoretical concept of *the paradox of the Black Professional* (Ferguson & Dougherty, 2022). This theory explains the pressure that Black professionals deal with to appeal to the assumptions of whiteness in professionalism, while being in a Black body. This paradox emphasizes the extent that the relationship between the two types of identity development affect each other and cannot be fully distinguished.

This literature tells me that identity is difficult to develop and maintain when it comes to endeavors that require professional presentation of self. The fact of being a Black woman on a personal level and trying to develop professionally facilitates the obligation to make unnecessary changes to their personal identity, which in turn negatively impacts work contribution and overall performance. There is a notion that code switching is more professional because you don't sound like a Black person, as Blackness is associated with deviance over scholarship. Likewise, hair must be of a Eurocentric standard for that person to have a chance at being seen as professional. Cultural labor describes the constant process of the pushes, and the pulls of how professional standards can cause conflict in this type of socialization. However, there isn't much literature examining the educational system as a catalyst to the erosion of the Black personal identity and sense of self. It only highlights the complexities and practices that Black people take to have a shot at gaining in the professional world. This is because intersectionality amplifies the stigmas found in the identity of the Black women by describing the multiple factors of advantage and disadvantage. My study addresses this gap by examining these complexities and practices in educational contexts that are predominantly white professional adjacent. Furthermore, it evaluates the cultural clashes between the Black women's ontology and matrices of power and privilege.

Theoretical Framework

In this study, I draw from several theoretical frameworks and constructs to view this case study ranging from distinct areas of thought. In particular, Intersectionality (Crenshaw, 1989) and Black Feminist Thought (Hill Collins, 1990) are two recurring frameworks that come up in this project. I place an emphasis on these two frameworks because of the direct relevance to my study population. Intersectionality is foundational in this research project because it provides a basis for the dimension of discrimination that comes with being both Black and a Woman. Black Feminist Thought examines the consequences that derive from the Intersectionality of being both Black and a woman, and offers a way of thinking that challenges those outcomes. I also draw from the frameworks of Double-Consciousness (DuBois, 1903) and Cultural Capital (Bourdieu, 1977). Double-Consciousness is relevant in a general sense because it talks about the two identities that African-Americans carry that cannot be fully merged together because of the rejection of their Blackness. In addition to Double-Consciousness, Cultural Capital places an emphasis on the navigation of the dichotomy of personal and professional development found in Double-Consciousness. That dichotomy consists of the themes around professional practices found in the literature review on Black women and Professionalism. In like manner, Anti-Blackness is a name to the racial prejudice that black people face, most often associated with social environments that extend to the rejection of blackness. (Morris, 2020) Another significant framework that I will apply in the project is Racial Battle Fatigue, which is the physiological stress responses that racially oppressed members of a group partake in society. (Smith, 2003) This theory is a result of stereotyping the Black identity, in which Critical Race Theory sets the stage for

interpreting how these social conceptions and expectations of Black women in predominantly white professional settings are shaped.

Methodology

The methods I will be using for this project will consist of interviews, survey data, document analysis, and ethnography. The methodologies I draw from are case study analysis and storytelling narratives. This case study will focus on how Black women develop professionally considering the many interpretations and stigmas around their personal identity. Throughout time, the identities of Black women have not been in their control due to the negative consequences of Intersectionality. In *Black Feminism in Qualitative Inquiry: A Mosaic for Writing Our Daughter's Body* (2019), Evans-Winters discusses the narrative that Black girls are attached to and how it suffices as a burden to their identity. In light of that, the author gives a descriptive framework to give insight to this problem. In relation to my project, 'Black Feminism in Qualitative Inquiry' gives the context and scope that is needed to understand the Black women's experience in navigating their personal identity in different settings. To add on, Impression Management is also important because it deals with the conscious and subconscious actions that Black women feel the pressure to perform in the workplace to meet the standards of professionalism. With the goal of influencing how people perceive you, Impression Management happens when you are trying to escape stereotyped or generalized narratives that are related to your identities. Similarly, *Raising the Race: Black Career Women Redefine Marriage, Motherhood, and Community* (2015), Barnes explains how Black career women manage their relationships in their other social roles such as being a mother and wife while balancing the expectations that come with them. This is an interesting observation in centering Black women and their careers and examining how it influences other areas of their lives. Furthermore, the framework found in *Black in White Spaces* (2022) focuses on symbolic racism as it relates to Black people in America being generalized to crime and poverty. Anderson uses an ethnographic approach to study the racial barriers that makes it challenging to be Black in white space. This study acknowledges the divide in culture that is at every class level. Black women and professional development is a direct illustration of the Black in White Spaces framework because of the racial barriers that are inherent in American society.

Findings

These findings are supported by the frameworks and methodologies mentioned throughout this paper coupled with Erving Goffman's *The Presentation of Self in Everyday Life* (1959). This work connects to the context of being Black in a white space through Black positionality in the everyday world. Ironically, all of my interviewees defined being professional along the lines of being well put together and clean-kept in

character and appearance. They also justified their actions as a protection mechanism for adapting. *This portion will discuss the dimensions in which Black women deal with self presentation (Hair, dress, tone) in predominantly white professional settings.*

Ruth, who is a December graduate in the McCombs School of Business, reflects on her experience at UT Austin and educational abroad experience in South Korea and said, "I've learned that there's different levels of how Black women interact with professionalism, and I'm just on the end, kind of just shy away from any type of conflict. Because I don't want to ruin this opportunity for anybody else after me." This is in regards to stereotyping in which her interview spoke a lot about. Ruth's way of managing stereotypes is to not contribute to them as that would only make the general perception of Black women worse. This paper will take a closer look at how these three women from different Afro-cultural backgrounds share commonalities and differences in how they interact with Professionalism while having a socialized Black female body.

Professionalism and Black Hair

To begin, the first thing that comes up often for Black women and professionalism is the struggle with styling their hair. Opie & Phillips (2015) found that Afrocentric hairstyles on Black women were rated more dominant which is not favorable to heteronormative professional standards. Dominance refers to acts of agency that gives someone the opportunity to control their fate. Black women with Afrocentric hairstyles or 'natural' hair shows understanding of their agency and personal identity. This type of understanding of personal identity is what causes friction or conflict in predominantly white settings. Going on, Ruth talks about Professionalism and how her family contributed to the shaping of those ideas, which leads to her natural response to conform.

"I think that being professional in my sense, and my family thought of it as being clean and being clean kept. So like, talking to my parents, so like, I wouldn't have color in my hair. Like when I go to work, I wouldn't move to any crazy styles. Like even when I was working in corporate I did mainly like low buns and low puffs and everything that kind of kept my hair down. I didn't really wear my hair free or where my fro because it was a lot."

Ruth's learning of professionalism is passed down through family and mainly deals with restricting her hair to have a more slimming appearance that shows less dominance. Peace, who is also a graduating senior in the Moody College of Communication, talks about her battle with styling her hair for a now past interview that she had for a marketing internship.

"And like, I have an interview on November 21 and for some reason. I'm like, I want to take down these braids because I just feel like I can't, like, go into the interview with these braids, you know? And that is like, when I take it down. It's like, I'm even thinking about like, oh, what can I do? I like my natural hair."

As I continued to probe the question and response, Peace said more about her hair struggle.

“Yeah, it was already styled. Like, I've been on campus like this vibin.. Like no one has said anything. You know, going to like the interviews like now I'm like, oh, yeah, I can't take these braids to the interview. Like, this just looks crazy like, yeah, so”

These cases are very common for the hair choices of Black women when it is time to step into their professional selves. This is because these women live in their personal identities with their natural hair, and don't see anything wrong with the way their hair looks. Peace and Ruth experiences speaks to Goffman's idea of performance and having to decide how you are going to present yourself in certain instances.

Professionalism and Dress

Next to hair, choosing what to wear on a professional occasion has been another constantly occurring obstacle for these women. Especially for Joy, who is an International Business major in the McCombs school of Business. She explains her personal experience on clothing and even goes back to the point of hair and how the physical appearance of Blackness in predominantly white spaces can be problematic.

“And it's always something that we do like we check each other just because we know that like, black women are hyper sexualized. So we're always like, hey, maybe you should pull your top down just a little bit. So it covers your butt. Maybe you need to put on a little jacket over that because you know, you got too exposed at the top.”

Joy has friends who also share the same racial and gender identity as her, so they tend to look out for each other when presenting themselves in their classes. Joy wishes that she wasn't reduced to certain clothing just because of social opinions that come from having intersecting marginalized identities. Joy then goes into describing how this impacts their overall academic performance.

“And even here at McCombs like they grade you on professionalism. And knowing that, like you having a fro can bring your grade down and it can impact your grade or having a tight fitting skirt. When that's supposed to fit that way, just because of how you're built naturally.”

Peace talks about how she can't express her nationality in her dress because she wants to avoid dealing with cultural insensitivity. I followed up on the question of, 'How do you dress professionally?' by asking about Nigerian traditional wear.

“Yeah, man. I would love to dress like that. I would but man... That's crazy. Because yes, I would love to wear traditional wear. But I just thought the questions and the conversations were about to start. It's like I don't even want to open that door to start explaining why I have this, you know, like I can sew some nice suit pants..”

“Yeah, but someone's gonna be like, Oh, why do you have all those patterns or colors? or Oh, is it like Nigeria Independence Day? like, why does it have to be tied to anything, you know?”

Dress is another expression of personal identity that these women have to deal with next to hair style. The quoting above illustrates how it could be challenging to excel

without carrying the burden that comes with their personal identity as Evans-Winters describes in her book.

Professionalism and Tone (Code-switching + Double-consciousness)

The last of the three matters at hand deals with tone of voice, which I believe is more crucial than physical appearance. Code-switching is defined as the practice of going back and forth between two languages or dialects and it is known to come up mostly in conversations. In *'the Souls of Black folk'* (1903), W.E.B. DuBois coined the theory of Double-Consciousness, in which African-Americans are forced to see themselves through two splitting identities that cannot be fully merged together. Ruth talks about how code switching is constantly reproduced, but wasn't sure of the reasoning behind it.

"But I know that they're still like, you really can't go to work and have these what feels like Black conversations. So like there's this language barrier this this code switching that must continue"

I argue that it has to do with Elijah Anderson's *Black in White Space* because of the simple fact that Black people must exist in white space as a condition of their existence. In which, the need to appeal to the dominant culture reproduces the hierarchies and structures that are already in place. In relation to what Ruth said about the pressure to code switch, I asked Joy if there was ever a time where she was seen as unprofessional? Joy spoke about the realities for her on whether she decided to engage in this physiological practice or not.

"Yes. And I would say it mainly arises whenever I express a difference in opinion, even if it is respectful, even if it is valid, someone else can say the same thing five minutes later, just with a different skin tone. And it comes off as aggressive, it comes off as like, wanting to be combative. And I think that kind of falls into like that stereotypical Black women are always angry, even though it's like, "Hey, guys, I feel like we should utilize the colors of the company instead of regular colors that we feel we should use."

"I don't think it's a good idea." "I feel like you're being very aggressive." (Backlash)

Joy still experiences the discrimination that comes with her intersecting identity even if she tried to mitigate aspects of her personal identity. Joy believes that she gave her fellow colleagues no reason to respond to her in the way that they did. Finally, Joy gives a deeper interpretation on code switching and how it comes into her everyday life and divides her identity.

"And then also being at a PWI, the way I fit into professionalism here, something I always think about is how I look, how I speak, how I present myself, code switching. And code switching isn't something that is at the back of my mind, like it used to be when I was growing up as something I didn't actually do. Now being here at a PWI, Code switching is something I put on everyday before I walk out the door. So even in this conversation, this isn't the same tone, same verbiage I use when I'm in my business classes."

Conclusion/Discussion

Black women and Professionalism are two things that are difficult to merge together due to their differences. The standards of professionalism for Black women deal with perspectives on personal and professional identity, professional practices of conformity and resistance, perspectives on Eurocentric and Afrocentric hairstyles, and the paradoxes of Black identity development. These themes that were found in the literature were extended in this qualitative study in terms of Afrocentric hairstyles, choice in dress, and style of tone. This content is supported by various methods and methodolgies around this topic area, major frameworks include: Black Feminist Thought (Hill Collins, 1990), Intersectionality (Crenshaw, 1989), and Double-Consciousness (DuBois, 1903).

In light of the matters discussed in this paper, these participants have hope for the opportunity to live their most authentic self, free from the stigmatization of their intersecting identities. Peace, Joy, and Ruth collectively all practice 'Impression Management' when deciding how they are going to show up as a young Black professional. Impression Management is practiced when there is an effort to control or influence other people's perceptions. Altering natural hair, limiting dress selection, and changing your tone of voice, facilitate a complete transformation that separates them from their personal identity. This data supports the role and importance of identity construction of both the personal and professional Black women. Aside from that, these individuals acknowledged the social progress that has been made. However, they also agree that there is more work to be done beneath the surface.

Limitations/Future Research

The limitation of this research is that these women are in different areas of study, meaning that they have very different experiences with professionalism given their discipline. However, this research discovered that even though these participants have different career paths, there is common ground in their professionalization. Future research may include more participants from each field to have a better participant distribution. Future research may also contest my findings by changing the demographic to predominately Black settings.

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Genaro García (1867-1920): *Indigenista* Across Eras

Leo Ramírez

The University of Texas at Austin

Faculty Mentor: Matthew Butler, PhD

Genaro García (1867-1920) was a historian, educator, and collector, most recognized for his enormous Mexican history collection, foundational to UT-Austin's Benson Latin American Collection. Select scholars have championed his contributions to Mexican history and studied his feminism, yet García remains a surprisingly obscure figure, with a crucial piece of his legacy unexplored, his *indigenismo*. A late Porfirian intellectual crossing into the Revolution, García was in a unique position to influence historiography, public opinion, and curriculum alike. Along with continuous publications and commissions, García served as director of Mexico's Museo Nacional and the Escuela Nacional Preparatoria (ENP). From *Carácter de la Conquista Española* (1901) and *La educación nacional en México* (1903) to his ENP curriculum, García's many historical, political, and curricular writings offer a window into his intellectual thought and Mexico's larger intellectual development. Through a study of García's writings, I seek to revive the case for Porfirian *indigenistas*' significance and explore the fluid evolution of Mexico's racial narratives. Arguing for national education to right the "eternal mortal oppression" and "*degeneración*" of indigenous people, García utilized Porfirian modernity, romanticized indigenous people as Mexico's true and better ancestors, and rejected *mestizaje*, proving himself to defy traditional intellectual eras and categories.

Keywords: *indigenismo*, race, intellectual history, Porfiriato, Mexico

Introduction

García's 1901 *Carácter de la Conquista* quickly caused controversy in its attempts to characterize the Spanish Conquest.¹ Framing the conquistadors as cruel and intolerant fanatics, and the Conquest itself as a "massacre" and an "extermination," García moved that indigenous people had faced "eternal mortal oppression," and argued for a national education system to right the wrongs of the past.² Beyond criticisms of *Carácter de la Conquista* as a biased history, backlash to the book proved far more personal and ideological, with accusations García had hatefully defamed the "Spanish race" itself. Spanish historian Cesáreo Fernández Duro wrote "Genaro García, has offered the public a work with a fallacious title; a work preconceived in defamation of Spain that is at the same time awakening the latent caste hatred and that only waits for opportunities to reveal itself."³ García's loudest critic, historian Francisco Sosa, published an 86-page rebuttal of the work. Denouncing "*conquistadores modernos*" he expressed disappointment that García had: "without fear that his ancestors shake in their graves, defame[d] the Spanish race."⁴ What García refused to acknowledge, Sosa said, was not only a "single praise-worthy fact" of the Spanish but the "beneficial consequences of the fusion of races."⁵ García ignored that "we are Mexican... a new race."⁶ Writing a passionate rebuttal essay, García refuted charges of prejudice in his work, as he espoused his scientific method of relaying and analyzing the words of *historiadores primitivos*. It was sources themselves, he said, that simply revealed an uncomfortable truth that could not "unscrupulously acquit horrendous crimes," nor their long-term consequences.⁷ Instead, they demonstrated the "splendid civilization [the Spanish] destroyed and rare virtues of their unfortunate victims."⁸

"In vain, you try to make me hateful; [yet] those same members of the iberian race condemn with me the crimes of the conquest... I am sure that they will not have me wrong to advocate for the outraged privileges of truth and justice and... [to] show unlimited gratitude to the heroic mexica, who dying for their patria with

¹ Genaro García, *Carácter de la Conquista Española en América y México según los textos de los historiadores primitivos por Genaro García*. Oficina Tipográfica de la Secretaría de Fomento, 1901.

² García, *Carácter de la Conquista*, 6, 22, 24, 111, 176, 204, 210, 253, 266, 273, 313, 318, 320, 388.; Genaro García, *La educación nacional en México*. México: Tipografía Económica, 1903.

³ Cesáreo Fernández Duro, "Carácter de la Conquista Española en América y en México según los textos de los historiadores primitivos, por Genaro García." *Boletín de la Real Academia de la Historia* (Madrid) 39.5 (1901): 399–, 408.

⁴ Francisco Sosa, *Conquistadores antiguos y modernos, disertación a propósito de la obra de D. Genaro García: Carácter de la Conquista Española en América y en México, según los escritores primitivos*. México: Tip. y Lit. «La Europea,» de T. Aguilar Vera y Compañía (S. en C.), 1901, 10, 43, 57, 70.

⁵ Sosa, *Historiadores Antiguos y Modernos*, 9, 10, 43, 56, 57, 70.

⁶ Sosa, *Historiadores Antiguos y Modernos*, 57.

⁷ Genaro García, *Carácter de la Conquista Española en América. Réplica Dirigida al Señor Don Francisco Sosa por Genaro García*, 2, 9, 19

⁸ García, *Carácter de la Conquista*, 9.

superhuman resolution, victims of the excessive ambition and ferocious cruelty of Cortés and his henchmen, bequeathed us our greatest timbre of glory.”⁹

Meanwhile, García also opposed the concept of *mestizaje* itself, equating the “mixing” of Spanish colonization with the erasure of indigenous culture.¹⁰ The debate would persist as García teamed up with fellow young historian Luis Gonzales Obregón in a public defense of his work.¹¹ Yet, despite evident indignation at García’s “spiteful” remarks, his work as a historian, politician, intellectual, and *indigenista* would continue from the Porfiriato to the end of the Mexican Revolution.¹²

Remaining a surprisingly obscure figure, early eulogistic biographies of García serve as important overviews of his life and impact, while more recent narrow studies have helped to contextualize García’s place in intellectual history. Following a few obituaries written upon his death, notably including one by Luis Gonzales Obregón, the longest work on García to date remains a 1926 thesis written by UT master’s student Lola Jackson shortly after the García Collection was acquired by the Benson.¹³ The thesis serves as a celebratory overview of García’s life and contributions as a “writer,” “editor,” and “collector.” While framing García as patriotic and committed to his historical discipline, Jackson does not deeply explore García’s intellectual thought. Seventy-five years later, Carmen Ramos Escandón took on García’s 1891 law school thesis, *La Desigualdad de la Mujer*, analyzing García as a feminist ahead of his time, along with additional writing exploring his feminist influences and contextualizing his life.¹⁴ In a 2010 study of García’s 1910 *Leona Vicario* biography, Amy Wright would concur with

⁹ García, Genaro, *Réplica Dirigida*, 9.

¹⁰ Genaro García, “Noticias Históricas Generalidades.” In *La Arquitectura en México: iglesias; obra formada bajo la dirección de Genaro García por Antonio Cortés; la publica el Museo Nacional de Arqueología, Historia y Etnología.*, by Antonio Cortés, edited by Genaro García. México: Talleres de Imprenta y Fotograbado del Museo Nacional de Arqueología, Historia y Etnología., 1914, 1-2; García, *Carácter de la Conquista*,

¹¹ Genaro García. “Carácter de la Conquista Española, Réplica Dirigida al Sr. D. Pablo Macedo.” Edited by Luis Gonzáles Obregón and Genaro García. *Boletín Histórico Mexicano* 1, No. 1. (October 15, 1901). México.

¹² Sosa, *Historiadores Antiguos y Modernos*, 9.

¹³ Luis González Obregón, “Genaro García, su vida y su obra.” In *Boletín del Museo Nacional de Arqueología, Historia, y Etnología*, Epoca 4a. Vol. I. México: Imprenta del Museo Nacional de Arqueología, Historia y Etnografía, 1922; Juan B. Iguiniz. “Mexican Contemporary Writers: Licenciado Genaro García” in *Boletín semanal de información bibliográfica Nacional*, Mexico, 1922; Lola Jackson, “The Life and Work of Genaro García; an Estimate of His Contribution to Mexican Historiography.” Thesis, University of Texas at Austin, June 1926.

¹⁴ Carmen Ramos Escandón, “Genaro García, historiador feminista de fin de siglo.” *Signos Históricas* 3, no. 5 (2001); “Prólogo a la edición anotada...,” In *Apuntes sobre la condición de la mujer; La Desigualdad de la Mujer* by Genaro García. Edición y prólogo by Carmen Ramos Escandón. Universidad Autónoma de Zacatecas. Distrito Federal: Editorial Miguel Ángel Porrúa, October 2007.; Ramos Escandón also explores European influences on García’s feminism in “Genaro García: La Influencia Del Feminismo Europeo En Sus Posiciones Sobre Las Relaciones Entre Hombres y Mujeres En El Matrimonio.” *Sin Fronteras. Encuentros de Mujeres y Hombres Entre América y Europa, Siglos XIX-XX*, 2008, 65–89.

Escandón's description of García as promoting an active and autonomous "*mujer-ciudadana*."¹⁵ Most recently, in 2018, Patricia Montiel Rogel presented García as a pioneer who crossed eras in his historiographical methods and work as director of the Museo Nacional, stressing the presence of "*historia patria*" in several of García's works.¹⁶

Established as an important intellectual, ahead of the Porfiriato in multiple regards, this study aims to explore a critically understudied piece of García's belief system, his *indigenismo*. Seeing García as traversing Porfirian, Revolutionary, and Postrevolutionary racial and *indigenista* ideas, I seek to interact with previous literature on the development of early 20th-century Mexican intellectual thought. First, the oldest perspective, acknowledged yet now dated, places *indigenismo*'s beginning after the Porfiriato, with Porfirians solely engaging in positivistic, openly racist, and evolutionary-motivated movement towards modernity.¹⁷ Second, taken up by a few other authors in the 1970s, but usually briefly cited since, the 1960s Powell-Stabb thesis argues for Porfirian *indigenistas* significant presence, with prevalent debates over indigenous capacity for education and early articulations of *mestizaje*.¹⁸ Third, recent scholarship following Aguirre-Beltrán and Alan Knight, see Porfirian *indigenismo* as the philosophy's basis. Characterized by attempts to resolve an indigenous problem (within Porfirian aspired white modernity), this *indigenismo* would be co-opted in "enlightened" form by revolutionaries and combined with *mestizaje* in the post-revolutionary era.¹⁹ However,

¹⁵ Amy Wright, "Genaro García's 'Leona Vicario, Heroína Insurgente' (1910). A Centennial Revision of the Mexican Woman's Place in the Public Sphere." *Iberoamericana* (2001-) 10, no. 39 (2010): 145–59.

¹⁶ Patricia Montiel Rogel, "Genaro García y La Historia En La Construcción de La Nación. Los Festejos Del Centenario." In *Actores y Temas de Las Relaciones de México y Sus Fronteras*, coordinated by Laura Muñoz. México: Instituto Mora, 2018.

¹⁷ Hale aligns with Knight in the assertion that while "... scholars have tended to treat politics and philosophy after 1910 as separate categories," revolutionary though built off the positivism and liberalism of the Porfiriato. Charles A. Hale, *The Transformation of Liberalism in Late Nineteenth-Century Mexico*. Core Textbook. Princeton, NJ: Princeton University Press, 2014, 219–220, 258, 260; Martin S. Stabb, "Indigenism and Racism in Mexican Thought: 1857–1911." *Journal of Inter-American Studies* 1, no. 4 (1959): 405–423, 405.

¹⁸ T. G. Powell, "Mexican Intellectuals and the Indian Question, 1876–1911." *The Hispanic American historical review* 48, no. 1 (1968): 19–.; Stabb, "Indigenism and Racism in Mexican Thought"; John A. Britton, "Indian Education, Nationalism, and Federalism in Mexico, 1910–1921." *The Americas* (Washington. 1944) 32, no. 3 (1976): 445–458.; William D. Raat, "Ideas and Society in Don Porfirio's Mexico" *The Americas* 30 (1973): 53.

¹⁹ Scholars have debated the beginning of *mestizaje*, often traced back to seeds in the Revolution which grew in the post-revolutionary era, with others arguing for seeds in the late Porfiriato and Centenario. Alan Knight, "Racism, Revolution, and Indigenismo: Mexico, 1910–1940." In *The Idea of Race in Latin America, 1870–1940*, by Richard Graham. University of Texas Press, 1990.; Gonzalo Aguirre Beltrán, "The Indian and the Mexican Revolution," lecture, University of Texas, n.d, BLAC.; Gonzales, Michael J. "Imagining Mexico in 1910: Visions of the Patria in the Centennial Celebration in Mexico City." *Journal of*

while acknowledging the existence of Porfirian indigenistas, the category largely characterizes the group as ineffectual, with empty rhetoric and a minimal presence.²⁰

From *Carácter de la Conquista Española* (1901) to *La educación nacional en México* (1903) to his ENP curriculum, García's many historical, political, and curricular writings offer a window into his belief system and Mexico's larger intellectual development. Publicly exploring and utilizing *indigenista* ideas in his writings long before his famed revolutionary and post-revolutionary counterparts yet rejecting their direction, García helps prove the sophistication and impact of Porfirian *indigenista* actions. Thus, studying García's words, I seek to explore the fluid evolution of Mexico's racial narratives and revive the case for Porfirian *indigenistas'* significance. Arguing for national education to right the "eternal mortal oppression" and "degeneración" of indigenous people, García utilized Porfirian modernity, romanticized indigenous people as Mexico's true and better ancestors, and rejected *mestizaje*, proving himself to defy traditional eras and intellectual categories.

Biography & Documenting Historia Patria

A Zacatecan historian, educator, collector, and intellectual first connected with the Díaz regime, Genaro García (1867-1920) is most recognized for amassing an enormous Mexican history collection foundational to UT's LLILAS Benson Latin America Collection. From the late Porfiriato to his Revolutionary appointments and publications, García was in a unique position to influence historiography, public opinion, and curriculum alike. Born in 1867 into Díaz regime politics, García graduated from the Escuela Nacional Preparatoria in 1886, and from law school in 1891, with his thesis *La Desigualdad de la Mujer*.²¹ Elected to Mexico's Congress in 1892, García would publish

Latin American Studies 39, no. 3 (2007): 495–533.; Mauricio Tenorio Trillo and Aurora Gómez Galvarriato, *El Porfiriato*. Ciudad de México: FCE - Fondo de Cultura Económica, 2006.

²⁰ Aguirre-Beltrán, "The Indian and the Mexican Revolution," 1; Knight, Alan. "Racism, Revolution, and Indigenismo: Mexico, 1910-1940," 79.

²¹ Information about García's personal life is limited to that found in his 3-page autobiography, along with an interview of García's eldest son, Trinidad García, conducted by Jackson, and occasional self-references to his health in his personal publication. Assembling these pieces with Mexican government records, we learn that García was born in Fresnillo, Zacatecas on August 16, 1867. His father, Trinidad García was involved with Díaz regime government, serving as *Secretario of Gobernación* and then *Secretario de Hacienda*, alongside other positions and work in education. García devotes a half-page of his autobiography to childhood "delicate health" overcame through perseverance, with Jackson referring to him as "handicapped... by the lack of a strong, healthy body." External and self-references to continued health challenges would continue throughout his life, with reports on his worsening health describing "a nervous disorder occasioned by excessive work" resembling "pernicious anemia." García married Concepción Aguirre from San Potosí in 1895, dedicating his 1891 *Apuntes Sobre la Condición de la Mujer* to her, and with pair having 12 children. García's eldest son, would participate in the sale of his

many works throughout his professional career, from political papers to historical publications to civics textbooks, as well as continuously accumulating new additions for his treasured Mexican history collection.²² He would expand on his early 1900s professorships and *Documentos inéditos* series to become director of Mexico's Museo Nacional, receiving government commissions to lead the official chronicle of the 1910 Centenario and several other celebratory publications.²³ Remaining engaged as the Díaz regime ended, García's power appears to dip but did not disappear under Madero's government, growing under Huerta who appointed him director of the Escuela Nacional Preparatoria.²⁴ While García's term as director was short-lived, a notable quantity of material lives on at the Benson from his stay, from drafts of teaching standards for a *primaria superior* program to financial documents.²⁵ Amid reduced political power and declining health, Garcia would publish a few additional works towards the end of his life, including civics textbooks updated for the 1917 constitution.²⁶

collection to the Benson.; Genaro García, *Notes on My Life*. Typed copy by Lola Jackson. México, circa 1896-1904, 1; Jackson, "The Life and Work of Genaro García, 18, 19"; Ramos Escandón, Carmen. "Prólogo a la edición anotada..." In *Apuntes sobre la condición de la mujer; La Desigualdad de la Mujer* by Genaro García. Edición y prólogo by Carmen Ramos Escandón. Universidad Autónoma de Zacatecas. Distrito Federal: Editorial Miguel Ángel Porrúa, October 2007.

²² García, "Notes on My Life," 1.; Jackson, "The Life and Work of Genaro García.;" Gonzales Obregón "Su vida y su obra."

²³ García participated in the split of the Museo Nacional into two separate institutions in 1909, leading the Museo Nacional de Arqueología, Historia, y Etnología; Jackson, "The Life and Work of Genaro García," 12.; García's Centenario chronicle was a huge endeavor, with several hundred photographs and nearly a hundred associated letters remaining in his collection; Genaro García Photograph Collection; GGP; Genaro García, *Crónica Oficial de las fiestas del primer Centenario de la Independencia de México*. Secretaría de Gobernación. México: Talleres del Museo Nacional, 1911.; Genaro García, *Documentos inéditos o muy raros para la historia de México*. 36 vols. México: Librería de la Vda. de Ch. Bouret, 1905-1911.; Genaro García, *Documentos Históricos Mexicanos obra conmemorativa del primer Centenario de la Independencia de México la publica el Museo Nacional de Arqueología, Historia, y Etnología, Bajo la Dirección de Genaro García por Acuerdo de la Secretaría de Instrucción Pública y Bellas Artes*. 7 vols. Secretaria de la Instrucción Pública. El Museo Nacional de Arqueología, Historia, y Etnología, 1910-1912.; García, "Noticias Históricas," In *La Arquitectura en México*; Genaro García, "Introducción," in *Los calendarios mexicanos, por Mariano Fernández de Echeverría y Veytia*. By Francisco Fernández del Castillo y Mariano Veytia. Edición del Museo Nacional de México. México: Imprenta y Taller de Fotograbado del Museo Nacional, 1907, BLAC.

²⁴ Jackson, "The Life and Work of Genaro García."

²⁵ Genaro García, "Escuela Nacional Preparatoria," GGP.

²⁶ García appears to disappear from Mexican political power following the end of the Huerta regime, likely blacklisted by association; Jackson, "The Life and Work of Genaro García, 18-19.;" García, *Nociones de derecho constitucional ajustadas a la Constitución de 1917 por Genaro García*. México: Librería de la Vda. Ch. Bouret, 1917. BLAC.; Genaro García, *Don Juan de Palafox y Mendoza. obispo de Puebla y osma. visitador y virrey de la Nueva España. por Genaro García*. Mexico: Lióreria de Bouret, 1918.

Appearing at the front of each of his collection's books, García's ex libris strikingly aligns with his asserted beliefs regarding the intersection between education,



Fig. 1. Bookplate in: Francisco Fabian y Fuero, *Regla, y constituciones que han de guardar las religiosas de los conventos de Santa Catarina de Sena, y Santa Inés de Monte Policiano de la ciudad de los Angeles 1773*, BLAC.



Fig. 2. Escuela Nacional Preparatoria Mural: Juan Cordero, *El triunfo de la ciencia y el trabajo sobre la envidia y la ignorancia*, circa 1874, Museo Nacional del Arte.

history, and an indigenous Mexican identity.²⁷ Though not created by García himself, the bookplate is designed to represent García and his library, acknowledged by him to hold great personal importance, as the bookplate's contents hint at heavy input in its creation. The central figure of the bookplate is a representation of Quetzalcoatl similar to depictions in 16th-century codices. Alongside infamous utilization by *indigenista* groups as a celebration of indigenous past, Quetzalcoatl nicely suits García as a patron of learning and knowledge. As García professes indigenous people to be Mexico's true and virtuous ancestors, the figure serves as the ideal personification of García's Mexican history collection. At the edge of the frame appears the slogan "*saber para*

²⁷ Fabian y Fuero, Francisco. *Regla, y constituciones que han de guardar las religiosas de los conventos de Santa Catarina de Sena, y Santa Inés de Monte Policiano de la ciudad de los Angeles 1773*, BLAC.; I have found two instances of other versions of Genaro García's bookplate in the collection, with a simplified red version in *La educación nacional*, along with an instance of different a small circular emblem in *Neptvno alegorico*, though the analyzed one is overwhelming the most common.

obrar,” which the Illinois Library translates as “know in order to act.”²⁸ Such a statement aligns with broader sentiments practiced by García regarding the importance of learning from history, such as in understanding the modern-day impacts of historic inequities and the importance of sharing truth. We can also view “*saber*” as a broader reference to knowledge or learning and “*obrar*” as work, getting a colloquial phrase closer to “knowledge for [the purpose of] work.” Falling closer to a typical Porfirian “order and progress” slogan, García recurrently outlines this combination of education and work as a social necessity and duty to one’s nation, an idea that is markedly present in his writings. Interestingly, the bookplate also bears remarkable parallels to a Porfirian Escuela Nacional Preparatoria mural. Depicting three central light-skinned women, the painting’s caption reads: “*Ciencia: saber para prever*” on the left and “*Industria: prever para obrar*” on the right.²⁹ García’s role in the Escuela Nacional Preparatoria brings a strong possibility of García or his artist knowing of the prior mural. Thus, perhaps we can contend García’s bookplate as an intentional co-option, with García instructing his audience to learn from Mexico’s true ancestors, indigenous people, towards action and idealized Porfirian work done for one’s nation.

Established by prior biographers and present in the forewords of his publications, García touted the use of primary documents to teach history as patriotic work yet distinguished himself from traditional Mexican patriotism. Both Jackson and Montiel Rogel touch on García’s nationalism in their works, as Montiel Rogel describes García as a “positivist author,” who exalts the patriotic value of citizens,” and Jackson writes that patriotism was García’s purpose as a historian, as he wanted to convey the “best chapters of history” and tell of “heroes... elevated ideals,” thus securing Mexico’s “future welfare.”³⁰ Known for devotedly growing his collection from his youth, García’s acquired materials, and statements in the introductions of his *Documentos Inéditos* support these

²⁸ “García, Genaro, 1867-1920.” University of Illinois at Urbana-Champaign Library

²⁹ The painting depicts Minerva, goddess of wisdom, sitting powerfully on a throne flanked by a brown-haired woman representing science (“Science: To know to foresee”), and a blonde-haired woman representing industry (“Industry: To foresee to work.”). The trio are surrounded by allegorical components further supporting the “triumph of science and work over envy and ignorance.” The original ENP painting was done by Juan Cordero, commissioned by Gabino Barrera, with the surviving replication done by Juan de Mata de Pancho in 1906.; Juan Cordero, *El triunfo de la ciencia y el trabajo sobre la envidia y la ignorancia*, circa 1874, Museo Nacional del Arte.; Olivares, Omar. “El triunfo de la ciencia y el trabajo sobre la envidia y la ignorancia.” *Gaceta UNAM*, September 19, 2022. <https://www.gaceta.unam.mx/el-triunfo-de-la-ciencia-y-el-trabajo-sobre-la-envidia-y-la-ignorancia/>.

³⁰ Montiel Rogel, “Genaro García y La Historia,” 48-55. Rogel breaks García’s works into two categories, his “elaborated” biographies and his editorial and primary material-focused works. She identifies García as aligning with 19th century liberal historiography in his framing of heroes working against “antagonistic forces.”; Jackson, “The Life and Work of Genaro García,” 23, “He was a worker, a scholar with a very definite purpose and he built up his library as a means of accomplishing that purpose. He was intensely patriotic; his greatest concern was for the future welfare of his beloved country which could only be promoted by a close study of past events... He wanted them to read as the best chapters of history, the biographies of the heroes whose most elevated ideals had made secure the well-being and progress of humanity.”

ideas, as he speaks of the importance of rescuing and preserving documents, to “exhume those who lie in forgotten tombs.”³¹ In order for all to learn from the “beneficent influence” of Mexico’s great men, it was “necessary” to put historical documents “into circulation,” and make them accessible to the Mexican public.³² Yet, this scientific process did not only allow praise of “*historia patria*,” but significantly encouraged historical analysis and critique.³³ In the first edition of *Documentos históricos*, commissioned in honor of the Centenario, García wrote:

“... history is not intended to flatter the vanity of peoples by transforming their heroes into divinities that are out of the question, nor their enemies into forcibly condemnable beings, but to investigate the truth and say it serenely, even if it is painful, without forgetting that the former are susceptible to serious weaknesses and the latter capable of laudable actions: only of this manner, History, far from spreading deception, worshiping false idols and habituating injustice, will instruct healthily, demolish disastrous altars and make equity friendly.”³⁴

Thus, in unraveling García’s adage “*sin documentos no hay historia*,” we have a deeper understanding of his passion and purpose in collecting and sharing primary documents, crucial to his famed *Carácter de la Conquista Española*.³⁵

Degeneración: Reframing Conquest & Celebrating Indigenous Past

In his first history publication, *Carácter de la Conquista Española*, García seeks to present a new image of the Spanish Conquest to educated audiences through the airing of previously hidden primary documents. Immediately, we must notice the very charge of the book’s title, as García did not merely seek to provide an overview of events, but to ascertain the moral character of conquest and the Spaniards themselves. Published in 1901 by a Mexican government-affiliated office and printed in Spain, the book surveys the Spanish Conquest as a whole, yet aims primarily at Mexican readers.³⁶ Disputing previous accounts, García assumes his reader has knowledge of

³¹ González Obregón, “Su vida y su obra.”; García, “Notes on My Life.”; García, “Advertencia.” In *Noticias bio-bibliográficas de alumnos distinguidos del Colegio de San Pedro, San Pablo y San Ildefonso de México (Hoy Escuela N. Preparatoria) por el Dr. Felix Osoreo, 1860 – 1862*, 1, Vol. 19. Documentos Inéditos ó Muy Raros Para La Historia De México. Bouret, CH: Librería de la VDA, 1908, 7-8.

³² García, “Advertencia.” In *Noticias Bio-Bibliográficas, 7-8.*; Genaro García and Carlos Pereyra. “Introducción.” In *Correspondencia Secreta De Los Principales Intervencionistas Mexicanos, 1860 – 1862*, Vol. 1, Documentos Inéditos ó Muy Raros Para La Historia De México, Publicados Por Genaro García y Carlos Pereyra. Bouret, CH: Librería de la VDA, 1905, VI.

³³ Wright, “‘Leona Vicario’... A Centennial Revision,” 157.

³⁴ García, “Prólogo” In *Documentos históricos*, vol. 1, X.

³⁵ “Without documentos, there is no history.”; García, *Boletín Histórico Mexicano*, 2.

³⁶ García, *Carácter de la Conquista*.

Mexican history, as he seeks to actively change entrenched notions of the Conquest. In his introduction, García asserts that documents showing Spain in an unfavorable light had been “buried... under the most rigorous security” by Spaniards and utilized by historians only “so far as they could favor the interests of Spain.”³⁷ Thus, in a pointed one-liner frequently mocked by his critics, García declared: “the history of the Conquest, grossly falsified, continued to be a series of commendable panegyrics for the conquerors, and of acerbic diatribes for the natives.”³⁸

To reconcile prior short-comings in documentation, García intentionally makes heavy use of primary citations, with quotes regularly stretching paragraph-length and occasionally taking up entire pages to the extent that one of García’s critics lamented that he had been unable to finish the work due to “inexhaustible series of text.”³⁹ Striking for the time, the quantity and quality of García’s primary source citations would set precedents in historiography, yet also naturally results in García’s expressed words and opinions taking up a much smaller portion of the book.⁴⁰ Such a format notably allows García to dodge direct criticism, as, in the face of adverse reactions, he would be able to say he was simply relaying the words of the Spanish themselves. However, it also aligns with García’s larger voracity for sharing and analyzing primary documents.” When Pablo Macedo criticized García for claiming to “gather” quotations while placing his own bias, García would elaborate on his intended methods, stating: “The historian must put his mental faculties into play in order to harmonize [Conquest] testimonies as much as possible, and to make them concur together to the clarification of the truth.”⁴¹ Facing heavy backlash, García emphatically maintained that he held neither hateful nor defaming intention, and warned of the danger of diminishing prior wrongs, while stating Francisco Sosa’s had launched:

“... attacks directed, not to the topic of debate, but to such or what concept of mine that [he] considered easy prey; so that the impartial love for the truth which I had imagined, was also changed into the damaged intention, very clear and sustained, to attribute to me the hatred and anger of all spaniards living in the Old and New World.”⁴²

Nevertheless, García airs a greater quest. Following effusive praise of Bartolomé de las Casas, García proclaims it was “...necessary that some voice, even at the end of

³⁷ García, “Prólogo” In *Carácter de la Conquista*, 2-4.

³⁸ García, “Prólogo” In *Carácter de la Conquista*, 4.

³⁹ García, “Réplica dirigida al Sr. D. Pablo Macedo,” 2.; Jackson, Lola “The Life and Worth of Genaro García, 55.

⁴⁰ Rogel details how García innovating in his historiographical methods, with his deep archival work setting precedents for bibliographic rigor, and use of historiographical imagination. Montiel Rogel, “Genaro García y la Historia.”

⁴¹ García, “Réplica dirigida al Sr. D. Pablo Macedo,” 4.

⁴² García, “Réplica dirigida al señor don Francisco Sosa,” 2, 19. Sosa, “*Conquistadores Antiguos y Modernos.*”

the nineteenth century, pay due tribute to truth and justice, at the same time of that to the outraged memory of the unfortunate indigenous of America.”⁴³

Seeking to relay a more accurate picture of the Spanish Conquest from the words of the Spanish themselves, García seeks to characterize the Spanish as cruel and intolerant fanatics who had rationalized the extermination of indigenous society. Contrasting favorable quotes with quotes describing the cruelty of figures' actions, García uses the first section of his book to frame general characterizations of the Spaniards, debunking his audience's previous conceptions, and intending to establish a more faithful historical background. Meanwhile, most of the book describes the events of conquest itself, with frequent forceful and deliberate language choices, notably including the words: “slaughter,” “extermination,” “enslavement,” and “massacre.”⁴⁴ Highlighting the cruelties of Spanish treatment of indigenous people, García seeks to present his claims, striking in his era, as logical conclusions drawn from the examination of primary documents. Yet, beyond individual examples of “inhumanity,” García gradually builds towards contending long-term consequences of the Spanish Conquest.

In his conclusion of *Carácter de la Conquista*, García introduces audiences to his assertion of Spanish-inflicted “*degeneración*,” with the Spanish Conquest forever harmful to Mexico's indigenous people. After laying out evidence of indigenous depopulation, García begins to detail a diminishing of indigenous people from previous glory, as conquest caused: “... the indigenous races of America not only lose one by one the infinite qualities that, with plenty of energy, gloriously shone in their days of freedom, but that they degenerated with inconceivable speed and finally fell into the pitiful state in which we still look at them at the end of the nineteenth century.”⁴⁵ Sosa goaded that García's purported degeneration would be impossible to ascertain without the employment of “paleontology.”⁴⁶ However, García does not simply assert an anthropological physical weakening but a cultural and more systemic one, professing that indigenous people had been “despised always; powerless yet to complain; [and] condemned to eternal mortal oppression.”⁴⁷ García's declaration of *degeneración* came amidst widespread discussion of *hispanismo*. Celebrating 400 years since Latin American countries had been regenerated under Hispanic language and culture, Spain's 1892 IV Centenario del Descubrimiento de América and surrounding discussion had resounding effects on the development of Latin American national identities.⁴⁸ *Hispanismo* saw both “criticism” and “acceptance” in Mexico, with a movement towards

⁴³ Despite his praise for Bartolome de las Casas, mocked by his critics, García's introductions explicitly clarifies that he avoids citing him as it “tends to determine the character of Conquest.” García, *Carácter de la Conquista*, 9.

⁴⁴ In context, García's use of “exterminio” may be better translated as “genocide,” as he speaks of an erasure of indigenous peoples and culture; García, *Carácter de la Conquista*.

⁴⁵ García, *Carácter de la Conquista*, 397-398.

⁴⁶ Sosa, *Conquistadores Antiguos y Modernos*, 56.

⁴⁷ García, *Carácter de la Conquista*, 398.

⁴⁸ Carmen Cecilia Muñoz B., “Imaginarios Nacionales En La Exposición Histórico-Americana de Madrid, 1892. Hispanismo y Pasado Prehispánico.” *Iberoamericana* (2001-) 13, no. 50 (2013): 101–18.

modernism and the proclamation of a “*raza española*,” along with the presence of Porfirian elites who sought to exalt a glorious indigenous past as part of a national Mexican pride.⁴⁹ Following closely with the latter ideas, García moved beyond criticism of the individual wrongs of the Spanish, to appear staunchly against conquest, a larger implicated colonialism, and the acculturation to Spanish culture itself, as forever harmful to Latin America’s native population. While the emergence of García’s *indigenismo* began with *Carácter de la Conquista*’s historical inquiry, his academic and political writing had contemporary societal implications, as García entered early 20th-century social debate as an intellectual.

Effusively praising and idolizing Mexico’s indigenous population, García regularly moved to defend indigenous capacity and cultural strength, with historic and continuing ramifications. Responding to ongoing debate, he regularly cast criticism on attempts to justify disparate treatment through the minimization of indigenous capacity. In defense of indigenous voting rights, García jabbed “... we ignore why it is of fashion to denigrate the descendants of Anahuac’s founders; about whom they condemn to inescapable disappearance.”⁵⁰ Meanwhile, he expressed distaste at negative depictions of indigenous people. Remarking on a 1900 Justo Sierra speech, García protested “...after lavishing the conquistadors with blindly apologetic words, he did not reserve for the hard-working *indios mexicanos* but the humiliating figure of a ‘woman who grovels.’”⁵¹ Significantly, García regularly returned to stressing indigenous contributions to Mexican society, fulfilling a patriotic duty to Mexico as the Porfirian regime, as he lamented:

“It is them, the *indios*, who till the fields that nourish us, and they who move the industry that enriches us, docile and submissive toward the people who occupy them, satisfied and always happy with the paltry salary that they win; it is also them who won and reconquered our independence, firm, tenacious, undaunted even in the face of the same death, as never before were the children of any other people.”⁵²

Thus, García not only asserts an adequacy of indigenous people, but puts forth their greatness over others, as “superhuman” and the “only ones... who maintain at a high level our moral sense.”⁵³ In a rebuke of Pablo Macedo, García moved to challenge each of the historian’s proposed cultural benefits of the Spanish Conquest, with indigenous language, culture, and religion holding superior value.

⁴⁹ Compared to its Latin American counterparts, Muñoz asserts Mexico was unique in this combination involving celebration of indigenous past. Muñoz B., “Imaginaris Nacionales,” 103.; Powell, “Mexican Intellectuals and the Indian Question,”; Stabb, “Indigenism and Racism in Mexican Thought”; Tenorio Trillo, *Mexico at the World’s Fairs: Crafting a Modern Nation*. Berkeley: University of California Press, 1996, 64-80.

⁵⁰ García, *La educación nacional*, 7.

⁵¹ García, *Carácter de la Conquista*, 8.; “... después de prodigar á los conquistadores palabras ciegamente apologéticas, no guardó para los esforzados indios mexicanos sino la humillante figura de “una mujer que se arrastra.”

⁵² García, *La educación nacional*, 8.

⁵³ García, Genaro, *Réplica Dirigida*, 9; García, *La educación nacional*, 10.

“... Trying to justify the Conquest with the fact that it has given the very few natives who could survive, a new language and a religion, is a rancid idea that no longer finds an echo even in Spain itself... You will have to agree with me that if the Spaniards imposed their own language in America, it was because this was easier for them than learning the languages of the *naturales*: the brusque adventurers Pizarro and Almagro, for example, would never have been able to speak the expressive, rich, precise, and melodious *Quichúa*.”⁵⁴

Thus, exalting indigenous past and ability, García moves to convey the gravity of the loss of indigenous culture.

Continuing to criticize Spanish *degeneración*, García asserts that conquest resulted in the continued erasure of indigenous culture, holding Mexico’s greatest strength and national pride. In his introduction to *La Arquitectura en México*, written in honor of the 1910 Centenario, García wrote: “The Spanish conquest destroyed not only the autonomy of the indigenous races that then populated our *patria*, but also their entire civilization: religious, political and civil institutions, customs, arts and sciences supplanted by those of European civilization.”⁵⁵ Yet, he went further, asserting indigenous people as Mexico’s true heritage, as he proclaimed that: “Disgracefully, these indigenous [architectural] traditions were quickly lost forever... which, if they had been preserved, would have finally produced a purely national art, more appropriate to our soul and our environment.”⁵⁶ Interacting with debate around defining a Mexican race, García firmly rejected *mestizaje*, equating mixing with cultural erasure in the “disappearance” of indigenous peoples.⁵⁷ Speaking of the Spanish conquest, he states that “there was no proper mixture of both cultures,” rejecting “mixed” Mexican origins as he moves further.⁵⁸ Criticizing Justo Sierra’s 1900 remarks on indigenous people, García laments that “the venerated professor pitifully confused the origin of the Mexican-Iberian race with Mexican nationality,” as both “preexisted” the Spanish conquest.⁵⁹ He also criticizes Justo Sierra for putting forth the “shameful” union of Cortés and Malintzin as Mexicans’ origin, arguing instead, for the recognition of Gonzalo Guerrero, as an anti-Cortés Spanish insurgent, and his children with a “leading *indígena*.”⁶⁰ In rejecting *mestizaje*, García removes himself from the path of later revolutionary and postrevolutionary *indigenistas*. Meanwhile, the elevation of indigenous people over the Spanish places García closest with Aguirre-Beltrán’s non-indigenous

⁵⁴ Macedo, “Réplica dirigida al Sr. D. Pablo Macedo,” 5-6.

⁵⁵ García, “Noticias Históricas,” in *La Arquitectura en México*, 1.

⁵⁶ García, “Noticias Históricas” in *La Arquitectura en México*, 2.

⁵⁷ García utilizes “disappearance” in an active and enacted sense, as opposed to a passive loss, with indigenous people “condemn[ed] to inescapable disappearance.”; García, *La educación nacional*, 7.

⁵⁸ García, “Noticias Históricas” in *La Arquitectura en México*, 1.

⁵⁹ García, *Carácter de la Conquista*, 8.

⁶⁰ García, *Carácter de la Conquista*, 8.

Indianists' "historic" and "cultural idealism" leaning towards belief in a "noble savage."⁶¹ However, García does not argue for indigenous autonomy, but for government intervention, with the regeneration of indigenous people possible through national education.⁶²

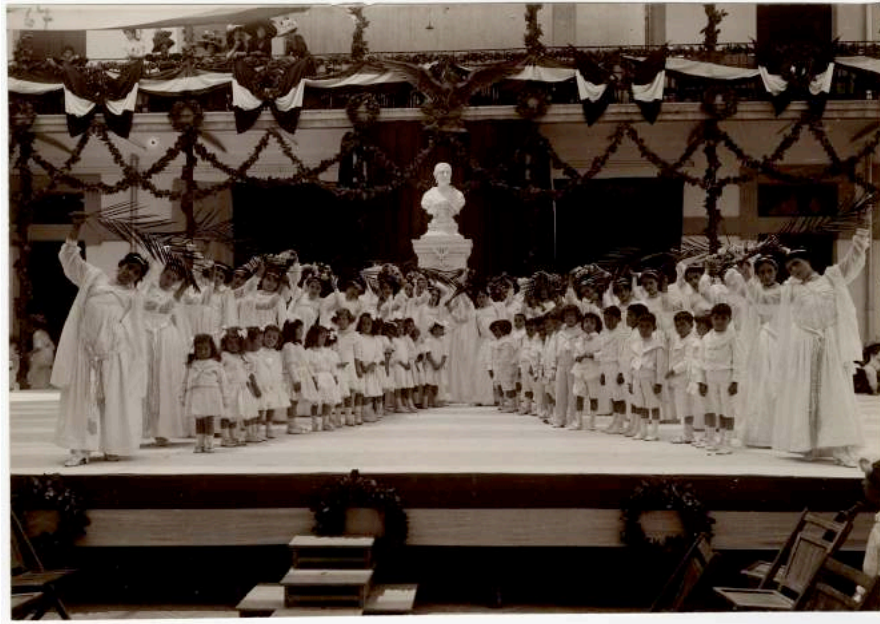


Fig. 3. 1910 Centenario School Celebration: "Niños y niñas de la escuela de la Corregidora formando un cuadro plástico," in *Scenes from the Centenario*, Volume 2, 7 September 1914, Box 2, Folder 0491, Genaro García Photograph Collection, BLAC.

National Education as a Social (Porfirian) Necessity

Aiming at general audiences, García argues for the necessity of a national education system in *La educación nacional en México*. Written two years after *Carácter de la Conquista*, the 13-page publication is much less well known yet holds great significance in the context of García's prior and future writings. Far less dense than García's historical publications and utilizing traditional Mexican Spanish, the publication assumes some knowledge of Mexican history and politics yet seems to largely target general audiences. We can break down García's argument for a standardized national

⁶¹ García's beliefs regarding Porfirian indigenous problem and barbarity complexes are explored in the subsequent section; Knight, "Racism, Revolution, & Indigenismo," 55; Aguirre-Beltrán, "The Indian and the Mexican Revolution," 8-9.

⁶² García's beliefs sometimes appear self-contradictory though they stay relatively constant with time. While García states a belief in indigenous people and culture as Mexico's true and best origin, with a danger in assimilation, he believes in the regeneration of indigenous people through national education, promoting Porfirian unity.

education system, “accessible to all,” into three sections.⁶³ First, García seeks to prove indigenous contributions to Mexican society and their place in Mexican heritage, as looked at previously.⁶⁴ Second, he rejects ideas of indigenous ineptitude, arguing that indigenous people had the capability to learn but had simply not been afforded the privilege of education, thus aligning himself with a larger faction of Porfirian *indigenista* thought.⁶⁵ Finally, García’s presentation of education as a social necessity makes up the majority of the work, and I will break down this argument in conjecture with excerpts from García’s other works later on.⁶⁶ In combining these elements, García blends “radical” beliefs of Spanish-inflicted *degeneración* with Porfirian politics, in a unique *indigenista* philosophy.

La educación nacional en México serves as a direct follow-up to the threads set by *Carácter de la Conquista*, as both works set the stage to argue for education to right the wrongs of the Spaniards’ “eternal mortal oppression.” Following the lines of an earlier thirty-page criticism of Spanish missionaries and conversion in *Carácter de la Conquista*, García’s concluding *Degeneración* section states that indigenous “... mental faculties are lethargic, because they have no instruction, except the religious one, which vicious and isolated did not infuse in them but superstition, fanaticism and intolerance.”⁶⁷ Apart from its criticism of Spanish Christianity, this statement paves a path for García’s incoming argument in asserting that indigenous people have been historically disadvantaged through a lack of proper education. However, despite possible implications of indigenous inferiority, García rejects the idea that illiteracy stemmed from ineptitude, stating in *Educación Nacional* that “...it is still iniquitous to anathematize them [indigenous people] so harshly for the simple fact that they are not one of the very few Mexicans who have enjoyed the magical school influence.”⁶⁸ Thus, García directly acknowledges both the privilege of education and argues for the capacity of indigenous people to learn, closely mirroring Powell-Stabb Porfirian *indigenistas* who challenged Porfirian racial prejudice.⁶⁹

Yet, he elaborates further. Returning to the end of *Carácter de la Conquista*, the concluding paragraph of his work declares: “...these unfortunate races, already rescued from servitude and placed again in a propitious environment, will return to manifest themselves prosperous and thriving, once they begin to feel the magical influence of an effective physical, intellectual and moral education.”⁷⁰ Thus, García proposes that

⁶³ García, *La educación nacional*, 10.

⁶⁴ García, *La educación nacional*, 7-8, 10.

⁶⁵ García, *La educación nacional*, 7-9.

⁶⁶ García, *La educación nacional*, 10-19.

⁶⁷ García places a particular blame on elements of a religious conquest for *degeneración*. Frequently positioned within García’s intellectual thought, more research is needed to understand García’s view of Catholicism as a part of “Hispanic” society, along with his personal religious beliefs.

García, *Carácter de la Conquista*, 397.

⁶⁸ García, *La educación nacional*, 8.

⁶⁹ Powell, “Mexican Intellectuals and the Indian Question”; Stabb, “Indigenism and Racism in Mexican Thought”; Vaughan, “The State, Education, and Social Class.”

⁷⁰ García, *Carácter de la Conquista*, 398.

education would not only allow indigenous participation in Mexican society, and facilitate the 'bettering' of indigenous people, but uniquely serve as rectification for prior treatment. "Mexico owes its most precious institutions, those that gave rise and being to its present progress, to a member of those same races, to the imperishable Don Benito Juarez... of superior intelligence and never-breaking energy."⁷¹ Within García's assertion, of course, is a suggested difference between Benito Juarez and other indigenous people, and also the idea indigenous people could be 'perfected' and repaired from the damage of the Spanish. How does García address the 'indigenous problem'?

While acknowledging many systemic inequities, Garcia proposes education as a solution to indigenous barbarism, though he complicates typical Porfirian thought by placing blame on the Spanish. In *La educación nacional*, García states that a lack of education would "crystalize them in their inferior position," forcing the illiterate to "live impassively their monotonous first life of backwardness and misery." Considering García's prior criticism of the Spanish for exercising ideas of indigenous inferiority to justify the conquest, his words immediately appear self-contradictory. However, while the innate links to Porfirian aspired modernity and "indigenous problem" language are impossible to ignore, García seems to draw several distinctions in his personal belief system. First, he depicts the Spanish as responsible for causing "*inferioridad*" through oppression and the denial of education, as opposed to an innate barbarism. Second, he proposes that, in a modern Mexico, a lack of education would prevent indigenous people from participating in society and reaching their "full potential... as, today, the peoples that are not educated disappear, because their very barbarity isolates them from the human community, atrophies them and blankets them."⁷² Thus, García wishes that Mexico's indigenous people could overcome Spanish-inflicted *inferioridad* and become integrated into Mexican society, toeing the line between alleged Porfirian coercive integration and "enlightened" revolutionaries' non-coercive integration.⁷³ García also further elaborates on his education plan, warning "... the peoples that lose their moral sense, die equally, because their corruption, a gangrenous social virus, hinders them, weakens them and disaggregates them"⁷⁴ Thus, utilizing adapted versions of Porfirian anti-barbarity language, García proves that his proposed education system is not simply a matter of literacy, but of instilling values into the general populace.

Appealing to and utilizing Porfirian political complexes, García purports the necessity of a national education system to instill values in Mexico's popular classes and facilitate national unity. First, a focus on moral education, notoriously associated

⁷¹ García, *Carácter de la Conquista*, 398.

⁷² García, *La educación nacional*, 11. García also describes indigenous barbarity as an isolated phenomenon, writing to Pablo Macedo: "No, Sr. Macedo the inhabitants of pre-Columbian America were not detestable barbarians; there was then, as there still are in Mexico, the occasional savage horde, but exceptionally, Sr. Macedo, truly exceptions," García, "Réplica dirigida al Sr. D. Pablo Macedo," 6.

⁷³ Knight, "Racism, Revolution, & Indigenismo," 80.

⁷⁴ García, *La educación nacional*, 11.

with Porfirian *científicos* and implemented in the Escuela Nacional Preparatoria, appears frequently in García's curriculum.⁷⁵ García's expressed ideas stretch further from indigenous people to a general focus on instilling values amongst the working class, particularly in the context of his 1912 platform for reelection to Mexico's *Cámara de Diputados*.⁷⁶ Here, a pledge "... to ensure the improvement and perfecting of the material, intellectual and moral conditions of the working classes" appears as the eighth bullet point.⁷⁷ Meanwhile, the platform also promises "... to defend each period of public peace and order as essential conditions for the preservation of national autonomy and the assurance of progress," a pitch supported by García describing "moral sense" as important for "tolerance" and "union" in *La educación nacional*.⁷⁸ Thus, García links morality to national unity and peace, needed for societal progress, intriguing in the context of the Revolution. In *La educación nacional*, García also states that illiteracy would "... make it forever impossible to merge them into one great family, the national family, whose first desire is the well-being of each of its members within the strengthening of the *patria*."⁷⁹ This idea of a communal national family, united in culture and patriotism, is supported in García's 1914 draft of teaching standards for civics at the Escuela Nacional Preparatoria, as he states a responsibility of citizens to serve their country, just as the country serves them.⁸⁰

Present throughout García's work is also the idea of building productive and patriotic citizens, with continued connections of García with Porfirian ideals. Revisiting García's 1912 platform for the *Camára de Diputados*, the tenth point promises to:

"...to promote, as soon as the economic situation of the country and the State permits, the dissemination of primary education, especially among our indigenous people to the extent necessary to ensure that all the inhabitants of the Republic and particularly of Zacatecas, will be able to cooperate effectively to their progress and be socially useful individuals."⁸¹

⁷⁵ Vaughan, Mary Kay. "Education and Class in the Mexican Revolution." *Latin American Perspectives* 2, no. 2 (1975): 17–33.; Hale, *The Transformation of Liberalism*; Matthias vom Hau, "Unpacking the School: Textbooks, Teachers, and the Construction of Nationhood in Mexico, Argentina, and Peru." *Latin American Research Review* 44, no. 3 (2009): 127–54.; Rosemary Bennett, "Positivism and Escuela Nacional Preparatoria of Mexico." Thesis (M.A.) – University of Texas at Austin, 1950, BLAC.

⁷⁶ Put together by the El Club Liberal Independiente, we cannot be sure to what degree García's platform was paraphrased or otherwise altered by the group. Nevertheless, the platform provides an apt opportunity to explore the application of García's ideals into the Mexican political sphere, as despite parallels to many of his other writings, the platform more frequently leans into traditional Porfirian and positivistic complexes than his historical and political writing; N. Espinosa, "Ciudadanos del octavo distrito de Zacatecas os invitamos para que votéis al C. Lic. Genaro García" in *Documentos para la historia de México, Serie 28, Tomo I, 1543-1912*. Zacatecas, México: El Club Liberal Independiente, June 1912, BLAC.

⁷⁷ Espinosa, "Ciudadanos del octavo distrito."

⁷⁸ Espinosa, "Ciudadanos del octavo distrito."; García, *La educación nacional*, 19.

⁷⁹ García, *La educación nacional*, 8.

⁸⁰ García, "Educación cívica... recomendaciones fundamentales," *Programas de Instrucción Primaria*. México: Escuela Nacional Preparatoria, 1914, GGP, 1.

⁸¹ Espinosa, "Ciudadanos del Octavo Distrito."

Again, García not only seeks to instill education for the unselfish benefit of indigenous people but to ensure societal cooperation and progress through individual contribution. Outlining necessary components of civics, García's civics curriculum declares "...that one should also be a good worker and realize that work, honestly and conscientiously done, ensures... independence... and respect, and contributes directly to the benefit of society."⁸² We can certainly argue the influence of existing systems in the two prior examples, with the 1912 political platform published by the Independent Liberal Club of Zacatecas, and García's curriculum written for the notoriously positivist Escuela Nacional Preparatoria.⁸³ However, *La educación nacional* takes patriotic contribution a step further, stating that education would allow individuals "...to acquire enough physical vigor to successfully undertake the battle for life and to defend the *patria* with untiring valor when its independence is in danger."⁸⁴ In addition to the moral character often stressed by Porfirian positivists, a focus on physical vigor, appearing in several of García's other works, allows us another realm in which to distinguish García. The focus is especially interesting in the context of García's avowed struggles with ill health, as his short 3-page autobiography takes time to remark on self-undertaken labors to overcome physical limitations and complete school.

"Since my age allowed me to understand how necessary it was for me to attend to my health in a special way, I sought to strengthen it, taking cold baths, doing daily exercises, and maintaining methods in my meals. Such was my assiduity in this purpose that I soon managed to conclude my education, without serious breach of my health."⁸⁵

Once educated, García was able to participate in and contribute to Mexican society through his historiography. Following such threads, could García have expected such work as beneficial or necessary for others to become integrated into Mexican society? Finally, we cannot fully conclude a study of García's educational beliefs, without a closer examination of some of his proposed curricula, in need of further study.

Application in 1914 Escuela Nacional Preparatoria Curriculum

Providing guiding principles for how teachers should instruct students in Mexican history, García's 1914 "*historia patria*" teaching standards for the Escuela Nacional Preparatoria (ENP) encourage the development of a unified and patriotic citizenry beyond the primitivity of the masses. Previously a history professor himself at the ENP, García's aspirational document begins with a list of seven values that teaching *historia patria* should instill. Here, the understanding and formation of moral character and

⁸² García, "Educación cívica," 1.

⁸³ Espinosa, "Ciudadanos del Octavo Distrito.;" Bennett, "Positivism and the Escuela Nacional Preparatoria."

⁸⁴ García, *La educación nacional*, 11.

⁸⁵ García, "Notes on My Life," 1.

Mexican ideals go hand-in-hand, encouraging “productive work” as an avenue for individuals to participate for the good of collective society.⁸⁶ From there, the document diverges from the prevailing curricular structure, detailing what students should learn during each academic year and how.⁸⁷ As described in the list of key values, events occur as a part of national narratives, and historical figures, as “children of the people,” should be celebrated as heroic.⁸⁸ In each year of study, the program highlights “conversations, recitations, and choirs in honor of the great men and great successes of the *patria* to be held during national holidays, appearing similar to García’s *Documentos Inéditos* quotations.⁸⁹ Striving to teach “as intuitively as possible,” we can also understand the curriculum’s drive for simplicity from the previous set of moral standards, as good and evil fight through highlighted figures.⁹⁰ It is also interesting to see what words the writer decided to capitalize. While the “*Fundación de Mexico*” and “*La Reforma*” are capitalized, the “*descubrimiento de America*” and the “*aztec*” are not, alongside the use of “*indígena*” as a noun, aligning with García’s other publications.⁹¹ Here, indigenous people are described as those practicing “ancient customs,” as acculturation is implicitly placed as the separating factor from a Mexican identity.⁹²

While we cannot be sure of the degree of influence García had in the creation of the ENP teaching standards and syllabi, the writing appears in line with his other publications, though certainly shaped by its intended destination.⁹³ With paragraphs trailing off and words crossed out and new words scribbled in, I suspect these documents to be drafts of curriculum, likely written by García or at least written under his instruction. We have further proof that García wrote much of the curriculum himself, in the fact that several 1910-1912 ENP curriculum publications appear in García’s collection and contain his notes, with passages underlined and curly writing squeezed in many margins.⁹⁴ Additionally, it is intriguing that García’s teaching standards do not fit into the *Preparatoria* structure of the ENP, labeled for use in *Primaria Superior*, as with the majority of the curriculum García created throughout his career designed for

⁸⁶ “Sucesos principales de la historia patria, referidos a la vida de personajes de primera importancia, recomendaciones fundamentales,” *Programas de Instrucción Primaria*, México: Escuela Nacional Preparatoria, 1914, Wallet 37-43 B, GGP.; Vaughn, “Education and Class.”

⁸⁷ Secretaría de Instrucción y Bellas Artes. “Ley que establece el plan de estudios de la Escuela N. Preparatoria expedida en 7 de enero de 1914,” Escuela Nacional Preparatoria, México: Tipografía Económica, 1914. BLAC; García, “Distribución de los estudios,” Escuela Nacional Preparatoria, 1914. Genaro García Papers. *Programas de Instrucción Primaria*, Escuela Nacional Preparatoria, GGP.

⁸⁸ *Sucesos Principales*, 1.

⁸⁹ *Sucesos Principales*, 3.

⁹⁰ *Sucesos Principales*, 2-3.

⁹¹ García’s word choices for describing indigenous people varies with “indios,” “*indígenas*,” and “naturales” all used, including within the same publication.; *Sucesos Principales*, 2-5.

⁹² *Sucesos Principales*, 2.

⁹³ García, “Escuela Nacional Preparatoria,” GGP.

⁹⁴ *Anuarios escolares de la Secretaría de Instrucción Pública y Bellas Artes, II. Escuela Nacional Preparatoria, 1910-1911*. Mexico: Tipografía Económica, 1910, BLAC.

elementary-aged students⁹⁵ Therefore, taking all of this into account, an in-depth study of all García's 1914 ENP curriculum is warranted and necessary, especially in a comparative context, to understand García's pedagogical and broader educational beliefs, and his impacts.

Contextualizing García

Mirroring Porfirian modernity and productivity language, García remained a man of the Porfiriato in many ways. As a Porfirian *indigenista*, García sought to present education as a solution to an indigenous problem, acknowledging indigenous capacity, and pushing for integration into modern Porfirian society.⁹⁶ Meanwhile, García wrote an adulatory childhood biography of Porfirio Díaz, loyal enough to the Porfiriato to participate in celebration of the country's Centenario at the height of the regime's unpopularity.⁹⁷ Along with several celebratory academic and historical publications, García wrote the Centenario's official chronicle, not published until after Díaz had fled, which Montiel Rogel remarked served as the ultimate "political legitimization" of the Díaz regime.⁹⁸ Amid active revolution, García would run on a platform for "peace, order, and compromise" in his 1912 reelection for the Cámara de Diputados.⁹⁹ Later, with declining health, García expressed distress about the Revolution in the forward of a 1918 publication, as he lamented that he "lacked the peace of mind for historical research, seeing [his] *patria* ruined, bled and discredited to the cause of an endless fratricidal struggle."¹⁰⁰ Yet, García's protests also stretch beyond Mexico, as he wrote first of a

⁹⁵ García, "Educación cívica"; García, "Escuela Nacional Preparatoria,"; García, *Derecho Constitucional*; Genaro García, *Nociones de instrucción cívica ajustadas a la Constitución de 1917 por Genaro García*. México: Librería de la Vda. Ch. Bouret, 1917. BLAC.

⁹⁶ Powell, "Mexican Intellectuals and the Indian Question"; Stabb, "Indigenism and Racism in Mexican Thought"; Gerardo Emmanuel García Rojas, "La configuración del 'problema indígena' y la solución educativa según la Sociedad Indianista Mexicana." Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, 2021.

⁹⁷ Genaro García, *Porfirio Díaz. His Parents, Childhood and Youth*, Mexico: Imprenta del Museo Nacional, 1906.

Jackson, "The Life and Work of Genaro García." 60-61; Montiel Rogel, "Genaro García y La Historia." 49-50.; García, Genaro. *Crónica Oficial*

⁹⁸ Montiel Rogel, "Genaro García y La Historia," 55

⁹⁹ Espinosa, "Ciudadanos del Octavo Distrito."

¹⁰⁰ Jackson, "The Life and Work," 18. García, "Advertencia," In *Don Juan de Palafox*: "No son propicios a las letras estos tempos en que una nación estupendamente poderosa, incitada de un modo feroz por el sentimiento de su fuerza y una loca ambición de dominar al mundo, ha originado brutalmente la guerra mas costosa y cruel de todos los siglos, sin darse cuenta de que el desconocimiento de los principios del derecho, de las prerrogativas de los débiles de los fueros de la humanidad o de las prendas del propio honor, nunca pueden cimentar una grandeza perdurable. Tales tiempos son doblemente angustiosa para un mexicano, porque le presentan a su patria arruinada, desangrada y desprestigiada a causa de una lucha fratricida incapables no menos violenta.

“stupendously powerful nation, incited in a ferocious way by the feeling of its strength and a mad ambition to dominate the world,” as the World War drew to a close.¹⁰¹

Appearing radical for his time, García also defies the Porfiriato in his linking of colonialism with historic oppression and assertion of indigenous people as Mexico’s superior ancestors. Yet, he does not align entirely with post-revolutionary racial complexes. Directly associating the Spanish conquest with historic maltreatment and the ostracism of native people, García sees colonialism itself as the root of the ‘indigenous problem.’¹⁰² From the start of *Carácter de la Conquista*, García describes the Spanish conquest as an extension of maltreatment of non-Christians on the basis of alleged inferiority, criticizing missionary practices and framing colonizing as power-hungry and cruel.¹⁰³ Meanwhile, García’s focus on humanities education and literacy over Porfirian sciences, and on the role of government in facilitating race relations, causes him to appear much closer to post-revolutionary ideologues like Manuel Gamio and José Vasconcelos.¹⁰⁴ Indeed, in his romanticization of indigenous past, García aligns with the most radical “reverse racism” sectors of revolutionary and post-revolutionary *indigenistas*.¹⁰⁵ However, associating cultural “mixing” with cultural erasure, García firmly rejects *mestizaje*, assessed as increasingly characterizing *indigenistas* from the revolution onward.¹⁰⁶ Nonetheless, his education plan aimed to promote indigenous participation in Mexican society, seemingly promoting acculturation.

Not fitting entirely into any era, and facing rejection from multiple sides, how can we understand reactions to García and his relative historical obscurity? Due to the public nature of its controversy, García’s *Carácter de la Conquista* holds the largest paper trail of recorded responses. Alongside public rebuttals from Francisco Sosa, Pablo Macedo, Cesáreo Fernández Duro, and others, García’s book also found allies, with examples of positive reviews to back up a later advertising claim that the book found “favorable judgments from reputed national and foreign critics.”¹⁰⁷ Previously writing a positive review of García’s work, Obregón would write a personal rebuttal to Francisco Sosa, teaming up with García to co-found the *Boletín Histórico Mexicano*, hosting García’s public defense of his publication.¹⁰⁸ Though García found opposition in challenges to Porfirian “open” racism in his assertion of indigenous capacity and criticism of Spanish, it seems surprising that such bold statements did not result in his complete isolation during the Porfiriato, perhaps toeing the line enough to attain protection with Porfirian vocabulary and a willingness to celebrate and represent the

¹⁰¹ García, “Advertencia,” In *Don Juan de Palafox*.

¹⁰² García, *Carácter de la Conquista*.; Knight, “Racism, Revolution, & Indigenismo.”; Gerardo Emmanuel García Rojas, “La configuración del ‘problema indígena’ y la solución educativa según la Sociedad Indianista Mexicana.”

¹⁰³ García, *Carácter de la Conquista*.

¹⁰⁴ Hale, *The Transformation of Liberalism*; Gonzales, “Imagining Mexico”; Bennett, “Positivism and the Escuela Nacional Preparatoria.”

¹⁰⁵ Aguirre-Beltrán, “The Indian and The Mexican Revolution,” 7-9. Knight, “Racism, Revolution, & Indigenismo,” 81.

¹⁰⁶ Knight, “Racism, Revolution, & Indigenismo.”

¹⁰⁷ Herbert E. Bolton, “Documentos Históricos Mexicanos: Obra Conmemorativa Del Primer Centenario de La Independencia de Mexico.” The American Historical Review. The Macmillan Company, 1912.

¹⁰⁸ García, “Boletín Histórico Mexicano”

regime.¹⁰⁹ Meanwhile, García proved uncontroversial enough to largely survive the switch from Díaz to Madero to Huerta, commissioned for publications and appointed to represent Mexico at international conferences.¹¹⁰ Yet, how did García view his associations? García's encouragement to "take on good ideas regardless of who they come from"... may help us to contextualize García's participation with multiple regimes and interpret a more general centrism.¹¹¹ We see a historian's neutrality that sought to present and clarify the "truth...without letting ourselves be dragged by hostilities or preferences for people, parties or ideas"¹¹² Similarly, perhaps we see García's centrism as a part of his assumed role as a government representative. Yet, he nonetheless takes bold positions outside of traditional Porfirian ideas.

Following a few extant eulogies from former friends and colleagues, García's image seems to disappear in the post-revolutionary era, as leaders resolutely sought to remove all symbols of the Porfirian (and Huerta) regimes.¹¹³ Serving as director of the ENP five years after García, José Vasconcelos would personally refuse to purchase García's collection when García's family pleaded with him to keep the collection with Mexico.¹¹⁴ In her forward to the 2007 re-publication of García's feminist works, Ramos Escandón questions if García's controversial writings and beliefs could have caused his historical obscurity, concluding they alone would not have been enough.¹¹⁵ Perhaps, García was relegated due to his beliefs, and perhaps the revolution's devastation on historical records and memory also concealed his presence, though his associations with the Porfirian and Huerta regimes may have proved fatal alone. While memories of García remain isolated in surviving records, his influence and that of other Porfirian *indigenistas* certainly seem apparent in the movements and philosophies of revolutionary and post-revolutionary intellectuals. Standing amidst many soon-to-be leading figures in his time at the Escuela Nacional Preparatoria and the Museo Nacional, García's role as a part of and in influencing political and intellectual movements warrants further study.¹¹⁶

¹⁰⁹ Aguirre-Beltrán, "The Indian and The Mexican Revolution," 11-12.; Knight, "Racism, Revolution, & Indigenismo," 80.

¹¹⁰ Madero did send off García a research trip though appointments continued; Jackson, "The Life and Work."

¹¹¹ García, "Ciudadanos del Octavo Distrito."

¹¹² García, "Ciudadanos del Octavo Distrito."

¹¹³ García's period of declining health aligns with post-Huerta regime governance, making difficult to ascertain to what degree his overall "blacklisting" was influenced by association to the Huertistas or by association with the Porfiriato.

¹¹⁴ The pair may have crossed paths previously with their time at the Escuela Nacional Preparatoria and intellectual and academic participation seeming to overlap.; Ramos Escandón, "Prólogo," 13.; José Montelongo, "Spotlight on the Benson – Evocación de Genaro García: coleccionista, historiador y maestro." Moderated by Lina Del Castillo. Video, Conference Proceedings, February 24, 2022. 2022: Archiving Objects of Knowledge with Latin American Perspectives. LLILAS Benson Latin American Studies and Collections.

¹¹⁵ Ramos Escandón, "Prólogo," 11-12.

¹¹⁶ Jackson, "The Life and Work"; García Rojas, "La configuración del 'problema indígena'." Jackson notably lists García's membership in the *Sociedad Indianista Mexicana*, recently analyzed as presenting education as a solution to an "indigenous problem," with more work needed to determine the extent of his involvement.

Promoting national education as a solution to the historic oppression of indigenous people, García sought to promote *indigenismo* through his historical, political, and pedagogical works. Blending Porfirian modernity, the romanticization of indigenous people, education, and a belief in racial mixture as cultural erasure, García proves himself to transverse multiple intellectual eras in a “path not taken.” Possessing great influence, and writing so many crucially important yet underexplored works, further analysis of García will not only be beneficial but necessary to help us to better understand how Mexico’s national narratives evolved in the early 1900s. A full comparative analysis of García’s curriculum, accompanied by a study of his, the Museo Nacional, and the ENP’s connection with *indigenista*-related political movement will also help support a fuller Porfirian-Revolutionary intellectual history. However, I believe the endmost goal must be a comprehensive analysis of García’s intellectual thought alongside his biography, providing crucial insight into early 20th-century Mexico’s intellectual development.



Fig. 4. Genaro García (center) with Museo Nacional de Historia, Arqueología, y Etnología staff: Ramos, “Lic. Genaro García with museum staff,” 15 August 1913, Oversize, 36L, BLAC.

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Examining Behavioral Differences and Altered Neural Responses to Stress in Youth at High Risk for Bipolar and Suicide

Nour Kassem

The University of Texas at Austin

Faculty Mentor: Elizabeth Lippard, PhD

Background: Bipolar disorder is associated with a high risk of suicide, and it is associated with the highest suicide risk among psychiatric diagnoses. It has been suggested that specific behavioral factors may contribute to an increased risk for suicide-related thoughts and behaviors in individuals with bipolar disorder or at high risk for the disorder. Impulsivity, risk-taking, and alcohol/substance use have all been identified as potential risk factors for suicide. It has also been shown that there are reported differences in response to stress not only in the behaviors of interest but also in the neural systems that underlie stress response in bipolar disorder. While it is known that this psychosocial stress plays an important role in the onset and course of bipolar disorder, there is little information known about how the substantial heritability of suicidal behavior alters the response to stress in young adults with bipolar disorder. This preliminary secondary analysis investigated the behavioral differences and neural response change with psychosocial stress in young adults at high risk (AHR) for bipolar disorder with a parental history of suicide and an AHR group with no familial history of suicide in a first-degree relative.

Methods: The present study integrated data obtained from two larger studies that recruited individuals with familial risk for bipolar disorder and healthy comparison youth. JMP was used to identify statistical significance in behavioral differences between the two parental subgroups. For the neural imaging component, participants completed a modified version of the Montreal Imaging Stress Task, which includes a control math task and a stress math task condition. fMRI data were preprocessed with Statistical Parametric Mapping software (SPM12). Data were realigned, corrected for slice timing, coregistered to anatomical data, spatially normalized to the T1-weighted template image, and spatially smoothed. T-tests were run with a significance level of $p = 0.005$.

Results: The two parental risk subgroups significantly differ in lifetime alcohol use disorder (p -value=0.04), but no other behavioral factors. A significant decrease in activation was seen in the right Broca area, left primary visual cortex, and right dorsolateral prefrontal cortex, as well as in the right dorsal posterior parietal cortex to the stress math task condition within the AHR group with a parent with a suicide attempt

($p = 0.005$). This decrease in activation in the stress math task condition was not seen in the AHR group with no familial history of suicide.

Conclusion: Results from this preliminary secondary analysis suggest an altered response to stress at high risk for bipolar disorder in young adults with a parental history of suicide attempts. Additionally, it highlighted alcohol use disorder as a potential risk factor for suicide.

Keywords: bipolar disorder, suicide, psychosocial stress, functional magnetic resonance imaging (fMRI)

1 | INTRODUCTION

1.1 | Psychiatric Disorders and Suicide

According to the World Health Organization, suicide is a significant public health issue/crisis that leads to approximately 700 thousand deaths yearly (World Health Organization). Suicide is a significant problem and is among the leading causes of death in Western countries (Arsenault-Lapierre et al., 2004). Approximately 90% of people who complete suicide meet the criteria and have been diagnosed with a psychiatric disorder, primarily mood disorders (Lonnqvist, 2009; Arsenault-Lapierre et al., 2004; Plans et al., 2019). Several psychological autopsy studies have indicated that out of the variables most often studied and regarded as clinically relevant, psychiatric disorders had the most elevated and substantial association with suicide (Cavanagh et al., 2003). Additionally, it has been found that approximately 21% to 57% of all suicides were completed by people who suffered from affective disorders. (Isometsa, 2001; Cavanagh et al., 2003).

Bipolar disorder is a common affective disorder characterized by episodic fluctuations in mood. Bipolar disorder has a lifetime prevalence of approximately 2% in the global population and a mortality rate two to three times higher than that of the general population (Müller-Oerlinghausen et al., 2002; Spijker et al., 2011). Despite significant changes in the understanding of the underlying mechanisms of bipolar disorder, the clinical manifestation of suicide behavior remains a persistent feature. Bipolar disorder is associated with a high risk of suicide, and mortality studies reveal that among all other psychiatric diagnoses, bipolar disorder is associated with the highest risk of suicide (Osby et al., 2001; Lybech et al., 2021). The expected lifespan for individuals with this disease is 8.5-16.6 years less than the general population, and the higher suicide rates significantly contribute to this reduction in lifespan (Lybech et al., 2021). Up to fifty percent of bipolar disorder patients will attempt suicide at least once,

and 15-20% of bipolar disorder individuals die from suicide (Lybech et al., 2021). Suicide rates in bipolar disorder differ between studies, but they are approximately 20 to 30-fold greater than rates reported in the general population (Plans et al., 2019). Additionally, suicide attempts in bipolar disorder have a higher rate of success: 1 out of 3-4 individuals who attempt suicide will complete suicide compared to 1 out of 30 individuals completing suicide in the general population (Gonda et al., 2012). Thus, gaining a more comprehensive understanding of the mechanisms that may contribute to the risk for suicidal ideation and behavior is essential to enhance early intervention strategies in both youths with bipolar disorder and those who are at risk. This would help in improving the understanding of risk factors associated with suicide and can aid in implementing preventive measures in a timely and effective manner.

1.2 | Genetics and Heritability of Suicide

Genetics may be one of the factors contributing to the risk of suicide in bipolar disorder, as reported by various adoption studies, twin studies, and family studies (Lybech et al., 2021). Family and twin studies have estimated the substantial heritability of suicidal behavior and suggest a significant genetic component (Sokolowski M et al., 2014). Both suicide ideation and suicide attempts are heritable, with estimates of heritability of suicide behavior ranging from 17-55% (Statham DJ et al., 1998; Roy A et al., 2001; Voracek M. et al., 2007; Sokolowski M et al., 2014). In one systemic review, the highest risk of successful suicide was observed in bipolar disorder-II subjects, and the heritability of completed suicide was approximately 40% (Plans et al., 2019). Studies have shown that rates of suicide attempts and completions are higher in individuals with a family history of attempts/completers, with suicide attempt heritability ranging from 30-50% (Roy A et al., 2001; Lybech et al., 2021). Additionally, it has been found that youth with a family history of suicide had a higher risk of suicide attempts and non-suicidal self-injury compared to those without such a history (Brent et al., 2002). While another study found that familial risk for suicide was associated with an earlier age of onset of suicidal behavior in youth with bipolar disorder (Melhem et al., 2011). Additionally, the genetic component of suicide seems partly shared with the inheritance of psychiatric disorders (Lybech et al., 2021). However, the familial risk of suicide risk is not accounted for solely by the familial transmission of mood disorder (Perlis et al., 2010). For example, offspring at risk for mood disorders with a parental history of suicide attempt(s) have a significantly higher likelihood of attempting suicide, nearly 5 times higher, than those without family history of suicide, even after controlling for familial transmission of mood disorders (Brent et al., 2015). Few studies have investigated how familial risk of suicide may contribute to suicide-related thoughts and behavior and whether such differences are independent from familial risk for bipolar disorder.

Moreover, there is evidence to suggest that specific behavioral differences may contribute to the risk for suicide-related thoughts and behavior. For instance, impulsivity, risk-taking, and alcohol/substance use have all been identified as potential risk factors

for suicide (Klonsky et al., 2013). Familial risk for suicide may be related to variability in these behaviors, as suggested by a study by Brent et al. (2013) which found that family history of suicidal behavior was associated with increased impulsivity in youth with mood disorders, and that these factors were significant predictors of suicide attempts in this population. Therefore, a better understanding of the relationship between familial risk for suicide and these specific behavioral factors could potentially inform more targeted interventions aimed at reducing suicide risk in youth.

1.3 | Behavior Differences Associated with Familial Risk for Suicide and Acute Stress

There is a growing body of research suggesting that specific behavioral factors may contribute to an increased risk for suicide-related thoughts and behaviors in individuals with bipolar disorder or at high risk for the disorder. Impulsivity has consistently been identified as a potential risk factor for suicide in this population (Melhem et al., 2007; Swann et al., 2014; Isometsa et al., 2014). Similarly, individuals with bipolar disorder have been found to exhibit increased risk-taking behavior compared to healthy controls which may further contribute to suicide risk (Michalak et al., 2011). Additionally, substance use has also been identified as a potential risk factor for suicide in this population. For example, a study found that comorbid substance use disorder was associated with an increased risk for suicidal behavior in individuals with bipolar disorder (Strakowski et al., 2008). Furthermore, nicotine use has also been identified as a potential risk factor for suicide in this population (Bartoli et al., 2013). The present study aimed to explore potential differences in behaviors, including impulsivity, risk-taking, substance use disorders/alcohol use disorder, and nicotine use, among youth with familial risk for suicide in youth with familial risk for bipolar disorder. Given the potential contribution of these specific behavioral factors to suicide risk in individuals with bipolar disorder or at high risk for the disorder, it is important to identify individuals who may be particularly vulnerable to these risk factors and to develop targeted interventions aimed at reducing suicide risk. Such interventions may include strategies to address impulsivity, risk-taking behavior, substance/alcohol use, and nicotine use, among other factors. By better understanding the relationship between these behavioral factors and suicide risk in this population, clinicians and researchers may be better equipped to develop effective prevention and intervention strategies.

However, given that familial risk is known to interact with environmental factors in contributing to complex behaviors such as suicide, I also examined the role of recent perceived stress on the behaviors of interest (impulsivity, risk-taking, and nicotine use) in youth with familial risk for suicide and/or those at high risk for bipolar disorder. Stress is a common trigger of new mood episodes, and it plays a significant role in various pathophysiological processes associated with bipolar disorder and suicidal behavior (Giurgiuca et al., 2017). Stress is a powerful predictor of illness onset, worse clinical course, and poor health outcomes in individuals with bipolar disorder (Preston et al., 2020). Stressful life events have persistently been recognized as a definitive risk factor

for suicidal behavior, as they frequently precede a suicide attempt (Nock et al., 2008; King et al., 2001; Wang et al., 2012). In a review of the suicide literature, Nock et al. (2008) postulated that biological and psychological factors, in addition to stressful life events, may place individuals at high risk for suicidal behavior. In a nationally representative sample of adults in the U.S., Wang et al. (2012) noted that stressful life events were correlated with suicide attempts. It is worth noting that the genes that have been implicated in suicide risk have also been suggested to contribute to variability in stress response (Laje et al., 2007; Gillespie et al., 2009; Mann et al., 2009; Zhao et al., 2020). Therefore, investigating the behavioral differences (in impulsivity, risk-taking, substance use disorders/alcohol use disorders, and nicotine use) in youth with, compared to those without, a parent with suicide attempt(s) is crucial to gaining a better understanding of how these behaviors may be altered in response to increased recent life stress and could help inform early intervention

1.4 | Altered Neural Response to Stress Associated with Familial Risk for Suicide

It has been shown that there are reported differences in response to stress not only in the behaviors of interest, but also in the neural systems that underlie stress response in bipolar disorder (Lippard et al., 2020). The stress sensitization model has been suggested in bipolar disorder and supports that variability in reactivity to stress may contribute to symptoms and disease progression (Lippard et al., 2020). While it is known that acute/psychosocial stress plays an essential role in the onset and course of bipolar disorder, there is little information known about how the substantial heritability of suicidal behavior alters the neuronal response to stress in young adults with a familial history of suicide in youth at high risk for BIPOLAR DISORDER. One recent study found that youth with a family history of suicide attempt(s) had greater activation in the orbitofrontal cortex (OFC) when exposed to negative emotional stimuli, compared to youth without a family history of a suicide attempt(s) (Jollant et al., 2008; Alarcon et al., 2019; Alacreu-Crespo et al., 2020). Brain regions involved in stress response are also involved in emotional regulation and have been implicated in the pathophysiology of suicidal behavior. Altered emotional processing in response to acute stress may be a potential mechanism underlying the familial transmission of suicide risk. It has been shown that recent perceived stress is associated with greater amygdala reactivity to acute stress in young adults with bipolar disorder early in their illness course compared to typically developing young adults. Specifically, young adults with bipolar disorder showed a positive relationship between the past month's perceived stress and amygdala reactivity to a psychosocial stress fMRI task (Le et al., 2021). Based on these findings, I hypothesized that youth with familial risk for suicide attempt(s) will show increased sensitivity to stress, i.e., increased activation in limbic systems in response to psychosocial stress with recent perceived stress related to greater reactivity to stress suggesting stress sensitization in youth with familial risk for suicide attempt(s). Further research on the neurobiological mechanisms underlying altered neural responses to

acute stress in young adults with familial history of suicide attempt(s) and familial risk for bipolar disorder could help to identify novel targets for intervention and prevention efforts.

2 | METHODS

2.1 | Participants and clinical data collection

The present study integrated data obtained from two larger studies that recruited individuals with familial risk for bipolar disorder and healthy comparison youth. One study was funded by internal funds. From the first study, there were 8 youths with a family history of suicide attempts and bipolar disorder, 15 without a family history of suicide attempts but with a family history of bipolar disorder, and 21 healthy comparison youth with no family history of suicide attempts or mood disorder. Additionally, the youth underwent an fMRI scan during which they completed the Stress Math Task, a modified version of the Montreal Imaging Stress Task (MIST). The second study was funded by the NIAAA (an R21 grant) and was an alcohol administration study. Similar to the first study, participants completed clinical evaluations, interviews of family history, and behavioral measures of interest but there was not a neuroimaging component. Fifty-two of the youth were enrolled in this second study (7 with a family history of suicide attempt and bipolar disorder, 7 without a family history of suicide attempt but with a family history of bipolar disorder, and 13 healthy comparison youth with no family history of suicide attempt or mood disorder). The two datasets were combined when investigating familial risk for suicide relations with the behavior of interest (i.e., impulsivity, risk-taking, alcohol/substance use disorder, and nicotine use) to provide a sample size of 71 participants (18-25 years of age). After combining the two datasets, there were 15 individuals with a family history of suicide attempt(s) and bipolar disorder, 22 without a family history of suicide attempt(s) but with a family history of bipolar disorder, and 34 healthy comparison youth with no family history of suicide attempt or mood disorder. By merging the two datasets, I aimed to achieve a more comprehensive dataset to enable a robust behavioral analysis. Participants were recruited for the two studies from the greater Austin area between March 2016 and February 2023. Additionally, I explored if the familial risk for suicide was associated with variability in neural response to psychosocial stress in the subset of individuals that completed the first study described above. The inclusion/exclusion criteria for the two studies are described below.

For both studies, the Structured Clinical Interview for DSM-5, Research Version (SCID-5RV; First et al., 1995) was utilized to confirm if participants had a history of psychiatric hospitalizations, neurodevelopmental, mood, anxiety, or psychotic disorders, eating disorders, or extended use of psychotropic medication. The Family History – Research Diagnostic Criteria – Epidemiological Version, (FH-RDC-E) (Lish et al., 1995) was employed to evaluate the presence of mental illness in first-degree relatives (including mood disorder, alcohol/substance use problems, and history of suicide

attempt(s). Youth with familial risk for bipolar disorder were not excluded if they themselves had a history of anxiety or depression to facilitate recruiting a more generalizable sample. In the first study (funded off of the PI's start-up package) familial risk for bipolar disorder was defined as having a parent or a sibling with bipolar disorder (type 1). In the second study (funded by NIAAA) familial risk for bipolar disorder was defined as having a parent with bipolar disorder. We categorized participants based on their family history for testing of our hypothesis: individuals with a first-degree family member with a past suicide attempt and bipolar disorder, individuals with a first-degree family member with bipolar disorder but not a first-degree family member with a suicide attempt, and a healthy control (HC) group that had no first-degree family members with mood disorders or a familial history of suicide attempt(s).

Exclusion criteria both studies included neurological abnormalities such as significant head trauma, contraindications to MRI scanning, and positive pregnancy test. The verbal comprehension and matrix reasoning portions of the Wechsler Abbreviated Scale of Intelligence-Second Edition (WASI-II) were used as a measure of full-scale intelligence quotient (FSIQ-2), and individuals with an IQ <85 were excluded from both studies. In both studies, if any individual endorsed a prior manic or hypomanic episode they were excluded. The healthy comparison group were excluded if they had a history of mood, anxiety, or eating disorder. Healthy comparison participants were also excluded if they had a lifetime history of suicide attempts or history of psychotropic medication use. For the NIAAA funded R21 study, additional exclusion criteria was in place based on the alcohol administration component. These exclusion criteria included history of severe cannabis use disorder, history of severe alcohol use disorder, current substance use disorder (other than alcohol, cannabis, or nicotine), medical or other reasons for not consuming alcohol, heart attack, high blood pressure, diabetes, or liver disease, adverse reactions to alcoholic beverages, not having consumed at least 4 (men) or 3 (women) drinks on a drinking occasion in the past 12 months, and unwillingness to have a friend or family member drive them home after alcohol administration sessions. Individuals who scored higher than 15 on the Alcohol Use Disorders Identification Test (AUDIT; Babor et al., 2001) were excluded based on phone screens for possible alcohol dependence.

Individuals who completed the MIST (off of the study funded by the PI's start-up) also completed the Hamilton Depression Rating Scale (HDRS) and the Young Mania Rating Scale (YMRS) at the examination time (Hamilton, 1960; Young et al., 1978) to confirm past week mood symptoms. All individuals with greater than mild mood symptoms (HDRS scores > 16; YMRS scores > 19) were excluded in the subset of participants that completed the fMRI task that examines altered responses to psychosocial stress to decrease noise and look at neural responses that may be more related to trait differences. Urinalysis was completed on the day of the scan to evaluate for substance use and pregnancy on the day of the MRI scan. All participants were asked to refrain from the consumption of any alcohol or drugs for a 24-hour duration before the MRI scan. All MRI studies were conducted at the UT Imaging Research

Centers located in the Norman Hackerman Building on the main UT Austin campus. The Institutional Review Board at the University of Texas at Austin approved all study procedures in both studies the data was obtained from. Written consent was also obtained from all participants before participation in the study.

Across both studies, all participants completed behavioral measures that were selected based on associations with suicidal thoughts and behaviors in prior studies. These included recent perceived stress, impulsivity, risk-taking, and substance use. The Perceived Stress Scale (PSS) was used to assess the past month's perceived stress, the total Barratt Impulsiveness Scale was collected to explore trait impulsivity differences between groups, the riskt-safe desk choice ratio from the Iowa Gambling Task (IGT) was used to assess risk-taking behavior, the Fagerstrom Test for Nicotine Dependence was used to assess physical dependence on nicotine in those who smoke. Prevalence of AUD/SUD history was also evaluated.

2.2 | MRI Acquisition and Preprocessing

Participants enrolled into the MRI study completed a modified version of the MIST psychosocial stressor task during a functional imaging scan. A high-resolution sagittal structural MRI scan was obtained through a three-dimensional gradient echo T1-weighted sequence on a 3-T Siemens Skyra (Siemens, Erlangen, Germany) using a 32-channel head coil, and the following parameters: repetition time (TR)= 1900 ms, echo time (TE)= 2.42 ms, matrix= 224 × 224, a field of view = 220 × 220 mm², 192 mm slices without gap and one average. fMRI data were obtained with a single-shot echo-planar image sequence aligned with the anterior-posterior commissure plane with a multiband factor of 3, TR= 2000 ms, matrix= 128 × 128, a field of view= 220 × 220 mm², and 72 two-mm slices without gap. FMRI data were preprocessed with Statistical Parametric Mapping software (SPM12). Data were realigned, corrected for slice timing, coregistered to anatomical data, spatially normalized to the T1-weighted template image, and spatially smoothed with a 4 mm FWHM Gaussian kernel.

2.3 | Functional Imaging Stress Task

During fMRI acquisition, a subset of participants completed the SMT, which is a modified version of the Montreal Imaging Stress Task (MIST) that includes a control condition with 40 math problems and two answer choices and a stress math task condition with 80 more challenging math problems and three answer choices. The low-stress control condition includes easy arithmetic problems without a social evaluation segment. All participants completed the control condition first, followed by the stress condition. For the control condition, participants complete 40 various subtraction problems with two answer choices. For the stress condition, participants completed 80 more complex subtraction problems with 3 answer choices. Each math problem was

presented for 5 s with a 1.5 s inter-trial interval, during which a fixation point was presented between problems. During the control condition, participants had 5 s to answer math problems using a button box. During the stress condition, problems were presented for 5 s, mirroring the control condition, but participants were told they had between 1 and 3 s to choose their answer for the 80 more complex math problems, so they had to respond more quickly while maintaining accuracy. The trial duration remained the same for the control and stress tasks (5 s). Additionally, the stress condition included six pre-recorded negative auditory feedback messages presented to the participants regarding their performance which were presented at fixed points during inter-trial intervals. Feedback was presented to all participants regardless of their performance. An MRI-safe pulse oximeter was used to record participants' heart rates throughout the scan to assess their physiological response to the stress condition. All participants completed the control condition first, followed by the stress condition. Following task completion, participants were debriefed and informed that their performance was not evaluated.

Following preprocessing (described in section 2.2 above), first-level modeling was conducted by contrasting math problems during the stress condition to math problems during the control condition for each participant (first-level) to model individual change in neural reactivity to the stress math, compared to control math, for each participant, and used in second-level between group analysis (described below).

Table 1. Demographic and clinical factors stratified by group

Table 1		Parental Risk for Suicide Attempt(s) (N=15)	No Parental Risk for Suicide Attempt(s) (N=22)	No Parental Risk for Suicide Attempt(s) or Bipolar Disorder (N=34)	p-value
Demographics					
	Mean Age (SD)	20.7(1.9)	21(2)	21.3(1.7)	0.55
	Number of Females (%)	12 (80)	18 (82)	23 (68)	0.43
	IQ (SD)	83.5(14.6)	74.4(20.3)	84.4(17.4)	0.11
	Asian (%)	1 (7)	2 (9)	4 (12)	0.61 _F
	Non Hispanic Caucasian/White (%)	9 (60)	12 (55)	14 (41)	
	Hispanic/Latino (%)	2 (13)	4 (18)	9 (26)	
	African American (%)	1 (7)	2 (9)	0	
	Mixed Race (%)	2 (13)	2 (9)	7 (21)	
Clinical Factors					
	Impulsivity (BIS) (SD)	63.1 (14.1)	63.1 (9.2)	58.7 (7.8)	0.17
	Perceived Stress Scale (PSS) (SD)	28.8 (4.7)	28 (5.9)	22.8 (6.9)	0.0014
	Life Time Alcohol Use Disorder (Y/N)	1 (7)	5 (22)	0	0.0067_F
	Life Time Substance Use Disorder	1 (7)	2 (10)	0	0.12 _F
	Nicotine/Tobacco User (Y/N)	2 (15)	7(35)	4 (14)	0.18 _F
	Beck Depression (SD)	5.1(1.5)	6 (1)	2.2 (0.8)	0.0119
	Beck anxiety (SD)	6.1(6.4)	6.7 (8.1)	3.1 (4)	0.07
	IGT (SD)	-23.3 (30)	-27.4(25.9)	-30.0 (27.2)	0.69

Note: _Fp-value calculated with Fisher exact test.

2.4 | Statistical Analyses

2.4.1 | Between-group differences in demographics and clinical factors

Between-group differences, across the three subgroups (parental risk for SA in the AHR group, no parental risk for SA in the AHR group, and healthy controls), in categorical variables were assessed with a Chi-square or Fisher's exact test, as appropriate, and included sex, race, history of alcohol and substance use disorders, and nicotine/tobacco use. Between-group differences in continuous demographic and clinical variables were assessed with a one-way analysis of variance (ANOVA) and included age, IQ, BIS, PSS, Beck depression inventory, Beck anxiety depression, and IGT measures of interest. Following the significant ANOVA p-value (for PSS, SUD, beck depression), an individual t-test was done to examine whether the parental risk for suicide attempt(s) group differs from the no parental risk for suicide attempt(s). These tests were conducted via JMP statistical software.

2.4.2 | PSS Interaction parental risk group on behavioral traits

Three-group (SA parental risk, no SA parental risk, and healthy comparison) by a 2- condition (control, stressful math problems) interactions were modeled for impulsivity, PSS, and risk-taking covarying sex. Additionally, we explored group by condition by PSS interactions on total BIS score and IGT behavior (risky minus safe deck choice ratio). Following no three-way interaction, the three-way interaction term was dropped and group by PSS and condition by PSS interactions were investigated.

2.4.3 | Between parental risk Group differences on neural response to psychosocial stress

We compared neural reactivity to stress (stress math minus control math modeled at the first-level for each participant) between individuals with familial risk for suicide attempt and bipolar disorder compared to individuals with familial risk for bipolar disorder but not suicide attempt. Sex was included as a covariate. We did not include the healthy comparison group in this model since our primary aim was to see if a family history of suicide attempts related to changes in neural response to stress, independent of familial risk for bipolar disorder.

Findings were considered significant at $p < .001$ and false discovery rate (FDR) cluster-level correction. FDR cluster-level correction was used to test the probability of detecting true significant findings against the risk of erroneously accepting false ones. Clusters that showed significant between group differences were subsequently extracted for each individual for the control math problems with data plotted for each subgroup to help with interpretation and the stress math problems for each individual.

3 | RESULTS

3.1 | Demographics and clinical factor analyses

The typically developing group showed lower PSS scores and had fewer individuals with lifetime alcohol use disorders, compared to the parental risk for suicide attempt(s) and no parental risk for suicide attempt subgroups. The two parental risk subgroups did not significantly differ from one another in PSS scores (p -value=0.65). The two parental risk subgroups significantly differ in lifetime alcohol use disorder (p -value=0.04). The typically developing group had lower Beck Depression scores compared to the parental risk for suicide attempt(s) and no parental risk for suicide attempt(s) groups. The two parental risk subgroups did not significantly differ from one another in Beck Depression scores (p -value=0.67). No other between-group differences

were observed for BIS, current substance use disorder, nicotine/tobacco use, Beck anxiety inventory, and IGT risky-safe deck choices. (see Table 1).

3.2 | Interaction effects between parental risk group on behavioral traits

No group-by-condition interactions were observed on impulsivity or risk-taking on the IGT. There were no main effects of the group and there were no significant PSS interactions observed.

3.3 | Neural responses to the stress math task

Familial risk for suicide attempt and bipolar disorder, compared to familial risk for bipolar disorder only, differed in neural response to stress in four clusters (Fig.1). Specifically, individuals with familial risk of suicide attempt and bipolar disorder had lower neural reactivity to stress, compared to individuals with familial risk for bipolar disorder but not suicide attempt in the right Broca area, left primary visual cortex, and right dorsolateral prefrontal cortex, as well as in the right dorsal posterior parietal cortex (Table 2). One of these clusters, located in the left primary visual cortex, surpassed the false discovery rate (FDR) threshold with a cluster ≥ 97 continuous voxels.

Table 2. Significant clusters with a reduction in neural activation

Anatomical Location (Brodmann area)	MINI Coordinates (mm) x y z	T	<i>p</i>
Left-Primary Visual Cortex** (BA 17)	-14 -78 4	5.13	<0.001
Right-dorsal PPC (BA 31)	-0 -34 50	4.60	<0.001
Right-dlpfc(dorsal) (BA 9)	-34 14 32	6.39	<0.001
Right-Broca-operc (BA 44)	58 10 0	5.95	<0.001

Note: BA, Brodmann area. ** Passed the false discovery rate cluster-level thresholding. Define PCC.

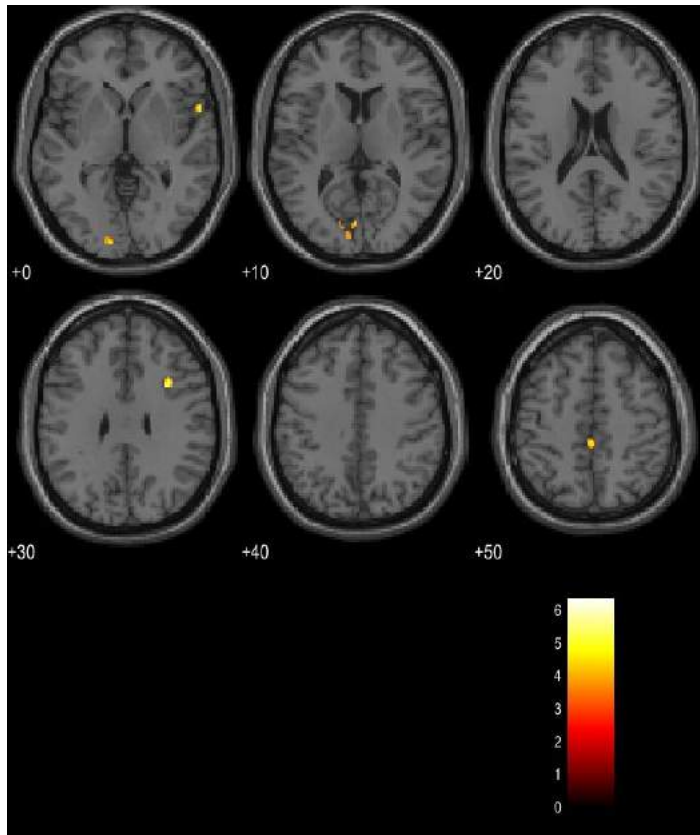


Figure 1. Significant clusters observed when contrasting neural reactivity to stress between the familial risk subgroups. Using a significance threshold of $p < 0.001$, four significant clusters were identified as suicide attempt familial risk being associated with lower neural reactivity to stress, compared to familial risk for bipolar disorder but not suicide attempt. The axial slices display the significant clusters that showed decreased functional magnetic resonance (fMRI) activation during acute stress (the MIST) in the right Broca area (Brodmann area 44, axial slice $z=0$), left primary visual cortex (Brodmann area 17, axial slice $z=4$), and right dorsolateral prefrontal cortex (Brodmann area 31, axial slice $z=50$), as well as in the right dorsal posterior parietal cortex (Brodmann area 9, axial slice $z=32$). The cluster in the visual cortex surpassed the FDR threshold. The four positive clusters identified are displayed in warm colors. cluster size = 20 voxels. The color bar represents the range of F values.

Once the significant clusters were identified, we extracted neural reactivity within these clusters for both the control and stress math problems separately for each individual and plotted control math and stress math neural reactivity for each familial risk subgroup. In our model of the visual cortex, we observed that individuals with a parental history of suicide attempt(s) displayed a decrease in neural activity during the stress math task as compared to the control math task (Fig. 2). This decrease was statistically

significant (p -value=0.001) and was not observed in the group with no parental history of suicide attempt(s).

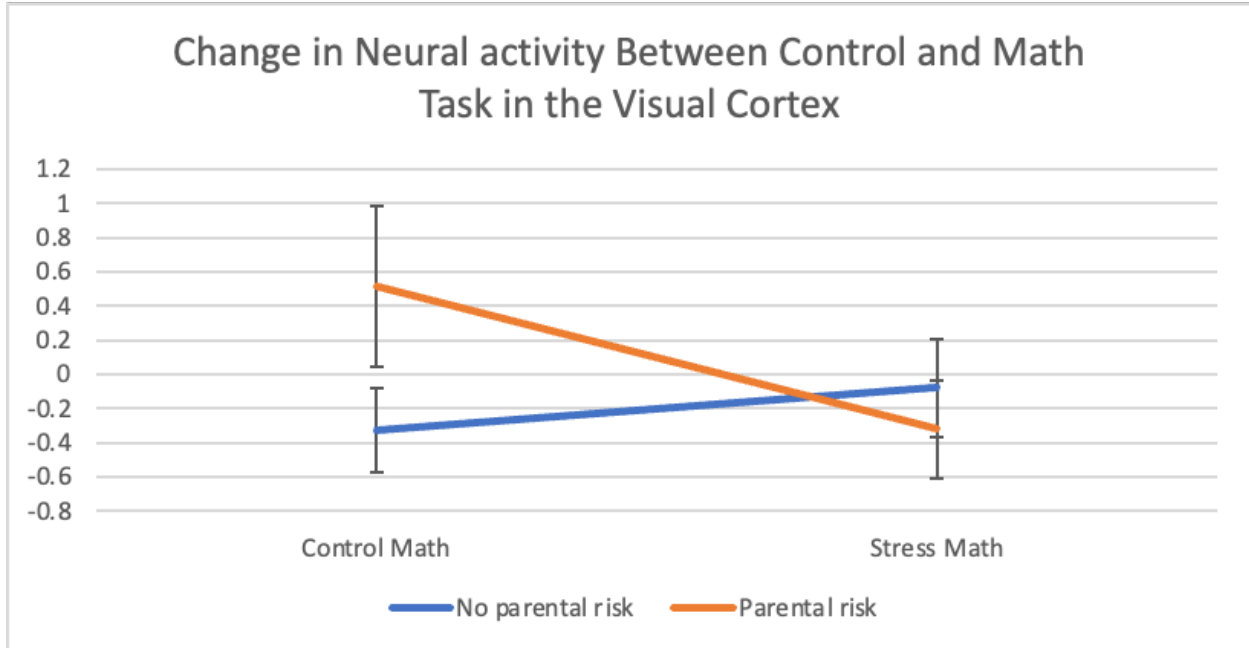


Figure 2. Change in neural activation in the visual cortex between the control math and stress math task conditions plotted for paternal risk for suicide attempt(s) and no parental risk for suicide attempt(s) subgroup. There was a significant decrease in activation from the control task to the stress math task in the parental history of suicide group (p -value=0.001).

A similar pattern was observed for the right dorsal posterior parietal cortex (PPC), right dorsolateral prefrontal cortex, and right Broca's area. Individuals with a parental history of suicide attempt(s) displayed a significant decrease in neural activity during the stress math task as compared to the control math task (Fig. 3A, 3B, 3C). This decrease was statistically significant (0.009 for PCC, 0.003 for the dlPFC, and 0.001 for the right Broca's area) and was not observed in the group with no parental history of suicide attempt(s).

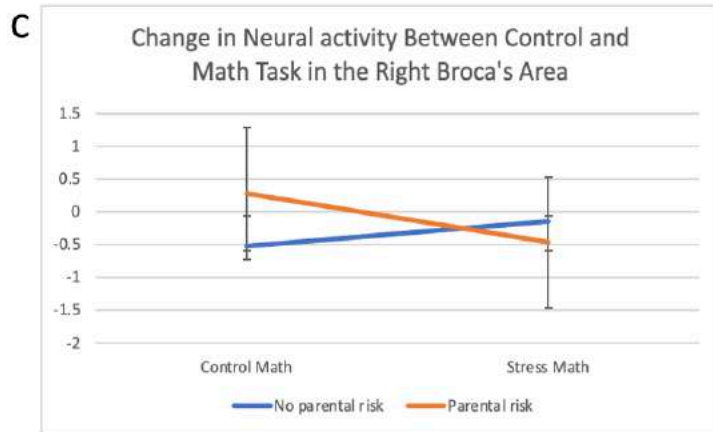
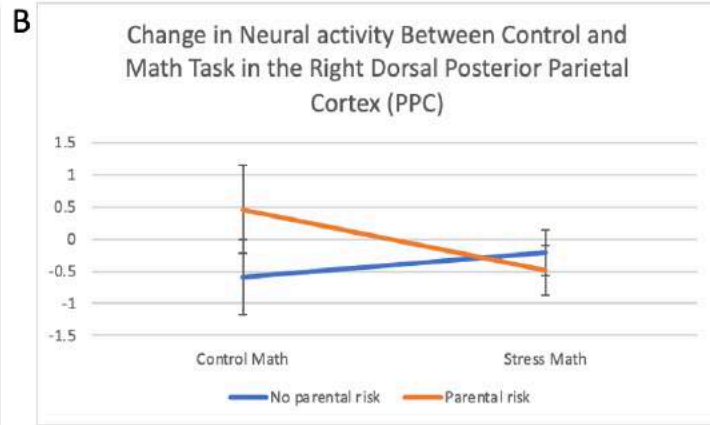
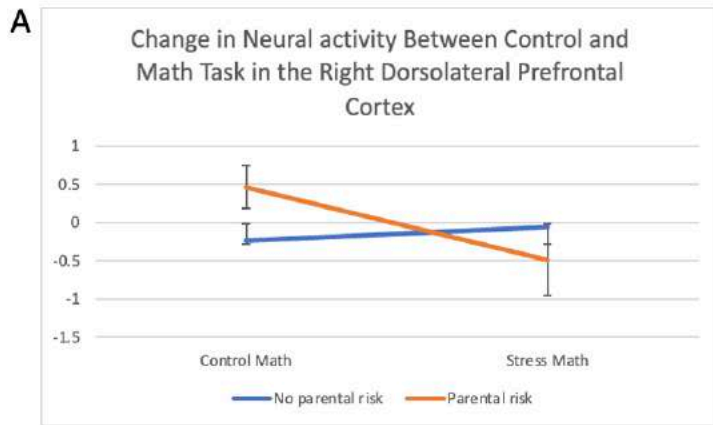


Figure 3. Change in neural activation in the right dorsal posterior parietal cortex, right dorsolateral prefrontal cortex, and right Broca's area. **A)** Change in neural activation in the right dorsal posterior parietal cortex between the control math and stress math task conditions in-between the paternal risk for suicide attempt(s) and no parental risk for suicide attempt(s) group. There was a significant decrease in activation from the control task to the stress math task in the parental history of suicide group (p-value=0.001). **B)** Change in neural activation in the right dorsolateral prefrontal cortex between the control math and stress math task conditions in-between the paternal risk for suicide attempt(s) and no parental risk for suicide attempt(s) group. There was a significant decrease in activation from the control task to the stress math task in the parental history of suicide group (p-value=0.003) **C)** Change in neural activation in the right Broca's area between the control math and stress math task conditions in-between the paternal risk for suicide attempt(s) and no parental risk for suicide attempt(s) group. There was a significant decrease in activation from the control task to the stress math task in the parental history of suicide group (p-value=0.001).

4 | DISCUSSION

The aim of this study was to investigate whether parental risk for suicide attempts, independently of or in addition to the parental risk for bipolar disorder, is associated with specific behavioral differences that have been suggested to increase the risk for suicide-related thoughts and behaviors (specifically, we examined, impulsivity, risk-taking behavior, substance use disorders, alcohol use disorders, and nicotine use). Our study found no significant differences between the parental subgroups regarding, impulsivity and risk-taking. However, studies have found that individuals with a family history of suicide or bipolar disorder are at a higher risk for engaging in impulsive behaviors that can increase their likelihood of attempting suicide (Swann et al., 2009; Lima et al., 2017). Of note, impulsivity and risk-taking can be inherited across generations, as it has been found to be elevated even in family members who do not meet the diagnostic criteria for bipolar disorder (Swann et al., 2009; Fortgang et al., 2016; Linner et al. 2019; Hindley et al., 2021). Additionally, there

is evidence to suggest that familial risk for bipolar disorder may also increase the risk of engaging in risky behavior (Zakowicz et al., 2001). However, our study consisted of a low sample size (low statistical power) and examined only one measure of impulsivity and risk-taking which limited the study's ability to make robust conclusions that are in line with previous literature findings. Measuring only one aspect of impulsivity or risk-taking behavior can limit the scope of the study and fail to capture other relevant factors that could be contributing to the behaviors being studied. Impulsivity is not a single, uniform trait, but rather a multi-faceted construct that can include different dimensions such as cognitive impulsivity, motor impulsivity, and non-planning impulsivity. Similarly, risk-taking behavior can be influenced by various factors such as sensation seeking, reward sensitivity, and punishment avoidance. Therefore, we should aim to use larger sample sizes and measure multiple aspects of these factors to obtain a more comprehensive understanding of how parental risk impacts impulsivity and risk-taking.

Interestingly, we saw that individuals with a parental risk for suicide attempts had a greater number of individuals with a history of alcohol use disorder. Bipolar disorder and alcoholism are highly associated with attempted suicide and comorbid bipolar disorder and alcoholism have been shown to increase the risk of suicidal behavior (Potash et al., 2000; Oquendo et al., 2010). Some studies have reported a significantly higher rate of attempted suicide in individuals with bipolar disorder and comorbid substance use disorders (Feinman et al., 1996; Tondo et al., 1999). Furthermore, a history of alcohol use disorders is a well-established risk factor for suicide (Potash et al., 2000; Oquendo et al., 2010). In families with probands who have a history of both alcoholism and suicidal behavior, there is a higher rate of attempted suicide in first-degree relatives with bipolar disorder (Potash et al., 2000). Specifically, families with alcoholic and suicidal probands had a 40.7% rate of attempted suicide in first-degree relatives with bipolar disorder, compared to a rate of 19.0% in other families (Potash et al., 2000). Overall, comorbid alcoholism was associated with a higher rate of attempted suicide among family members with bipolar disorder.

It is important to note that in the current study, parental risk was measured, but genetic risk was not assessed directly. Parental risk is a broader construct that encompasses both genetic and environmental factors. Environmental stressors have been identified as important risk factors for suicide. For instance, adverse childhood experiences, including abuse, neglect, and trauma, have been found to increase the risk of suicidal behavior in adulthood (Blomqvist et al., 2022; Ashworth et al., 2023). Furthermore, stressful life events, such as financial difficulties, relationship problems, and job loss, have also been associated with an increased risk of suicide. Other risk factors for suicide attempts include school bullying, academic stress, poor parent-child relationships, access to mental health care, social isolation, and insufficient coping skills (Kim et al., 2014). It is important to recognize that these risk factors are complex and can interact with each other to heighten the risk of suicide. In conclusion, while genetic risk factors are important to consider, it's crucial to recognize the impact of environmental stressors on suicide risk. The current study highlights the importance of

examining familial risk, which includes both genetic and environmental factors, in understanding behavioral differences that may increase the risk for suicide-related thoughts and behaviors. By recognizing and addressing environmental risk factors, such as adverse childhood experiences and stressful life events, we may be better equipped to prevent suicidal behavior and promote mental health.

We also explored whether parental risk for suicide attempt(s) is associated with differences in neural response to acute psychosocial stress among young adults, relative to those with only parental risk for bipolar disorder and no parental risk for suicide attempt(s). Our study found significant decreases in neural activation in response to stress in youth with parental risk for bipolar disorder and suicide attempt(s) in several brain regions during the MIST task, including the left primary visual cortex, right Broca area, right dorsolateral prefrontal cortex, and the right dorsal posterior parietal cortex. The parental risk for bipolar disorder-only subgroup did not show the same decrease in neural response to stress within these areas. These results could suggest that altered neural response to acute stress may be associated with parental risk of suicide attempts and while speculative could contribute to the parental transmission of suicide risk.

We hypothesized that youth with a parental risk for bipolar disorder and suicide attempt(s) would demonstrate increased sensitivity to stress, specifically through increased activation in the amygdala, prefrontal cortex, and anterior cingulate cortex. While our study findings indicate the opposite direction and implicate different brain regions, results still support parental risk for suicide attempts may relate to differences in neural responses to stress. Our most robust finding was seen in the left primary visual cortex, with this cluster surviving cluster-level correction for multiple comparisons. Studies have shown that performing mental arithmetic tasks and stressful mental arithmetic activates various regions of the brain, including the motor and visual association cortices ([Dedovic et al., 2005](#)). Brain regions observed to differ based on parental risk for suicide attempts have also been seen in previous studies involving mental arithmetic, including activation of the visual association cortex for the processing of visual stimuli ([Gruber et al., 2001](#)). Studies in major depressive disorder (MDD) and bipolar disorder patients have shown abnormal functions of the visual cortex ([Wu et al., 2023](#)). Recent reviews have also been evaluating the potential involvement of the malfunctioning visual cortex in the pathophysiology of MDD and bipolar disorder ([Shaffer et al., 2017](#); [Wu et al., 2023](#)). A fMRI study revealed that during emotion-related visual tasks, individuals with bipolar disorder in both depressive and manic states exhibited reduced visual cortical responses compared to those in a healthy state and healthy controls ([Shaffer et al., 2017](#)). Moreover, reduced functional activity in the visual cortex has also been observed in response to other cognitive tasks such as emotion processing tasks, visual attention, and verbal fluency in healthy or individuals with mood disorders? ([Shaffer et al., 2017](#)). Research suggests that reduced functional activity in visual processing tasks may be an understudied feature of bipolar disorder, as evidenced by the literature. Studies have also shown significant atrophy in the primary

visual cortex induced by psychological stress (Yoshii et al., 2017). However, we did not see reduced neural activity in the visual cortex in our parental risk for bipolar disorder only subgroup, we only observed that neural response pattern in our parental risk for bipolar and suicide subgroup. This could be due to the altered brain processing seen in healthy first-degree biological relatives of suicide attempters, specifically in decision-making and emotional processing which could potentially contribute to the observed differences in neural activity (Ding et al., 2017). Additionally, the genetic risk for bipolar disorder and suicide may interact or synergize, leading to further alternations in neural activity.

Our study revealed decreased neural activity in the right dorsolateral prefrontal cortex among individuals with a parental history of both bipolar disorder and suicide attempt(s). In a study examining neural responses to psychosocial stress in individuals with mood disorders, hyperactivation in the dorsolateral prefrontal cortex was observed in remitted patients but not in depressive or manic patients (Ming et al., 2017). This suggests that brain activation changes in this region may be involved in stress responses. Research has also found that under negative emotion, a depression without suicidal ideation group had higher activation than a healthy control group in the right dorsolateral prefrontal cortex. Recently, reviews on neuroimaging studies of suicidal brains reached a consensus on the involvement of particular brain areas in suicidal behavior, including the dorsolateral prefrontal cortex (Cox Lippard et al., 2014; Zhang et al., 2015; van Heeringen et al., 2011). A study conducted on individuals with both depression and suicidal ideation revealed hypoactivation of the right dorsolateral prefrontal cortex, which was not observed in individuals with depression alone (Zhang et al., 2015; Zhang et al., 2020). These findings suggest that the decreased activity in the right dorsolateral prefrontal cortex that we observed in the group with parental history of bipolar disorder and suicide attempt(s), but not in the group with parental history of bipolar disorder alone, may be attributed to their genetic risk for suicide. These findings suggest that genetic risk factors may contribute to the differences in brain activity observed between the two groups. Furthermore, it has been shown that during fear conditions individuals with suicidal ideation, but not bipolar disorder alone exhibited some deactivation of the right dorsolateral prefrontal cortex (Sagar et al., 2013). These findings suggest that the dorsolateral prefrontal cortex plays a key role in regulating emotions and cognitive function. Interestingly, studies have shown that exposure to psychosocial stress, such as performing challenging arithmetic tasks from the MIST, can lead to increased activity in the prefrontal cortex, particularly in the right dorsolateral prefrontal cortex, in healthy individuals. This may suggest that the neural alterations associated with genetic risk for bipolar disorder alone may not be as significant as those associated with genetic risk for both bipolar disorder and suicide.

We also observed decreased neural activity in the right dorsal posterior parietal cortex among individuals with a parental history of both bipolar disorder and suicide attempt(s). The parietal region is a crucial component of the executive control network, playing a critical role in regulating and modulating thought, emotion, and behavior

(Campos et al., 2021). Previous studies have shown that first-degree relatives with a family history of suicide in comparison to healthy control groups showed decreased activation during decision-making in several regions including the parietal cortices. This pattern was different from the neural findings in depression, and the decreased neural activation in the parietal cortices was not seen in parental risk for mood disorders alone (Ding et al., 2017). Other neuroimaging studies have shown that there is hypoactivation in parietal regions, including the posterior parietal cortex, during cognitive and attention tasks in individuals with bipolar disorder (Frangou et al., 2012; Bi et al., 2022). Our findings in the parental history of bipolar disorder group are contradictory to some of the literature which states that individuals with bipolar disorder show reduced activation in the parietal cortex. Additionally, chronic psychosocial stress has been shown to disrupt the posterior parietal cortex (Libovner et al., 2020).

We also observed decreased neural activity in the right Broca's area among individuals with a parental history of bipolar disorder and suicide attempt(s). It is important to note that Broca's area is primarily associated with language processing, specifically with the production of speech (Zhu et al., 2018). Functional alterations in Broca's area have occasionally been reported by a few studies in bipolar disorder and in unipolar depression (Zhu et al., 2018). It has been shown that Broca's area has had success in distinguishing bipolar disorder patients from healthy controls (Zhu et al., 2018). Individuals with bipolar disorder have also been shown to exhibit less deactivation in Broca's area compared to those with unipolar depression (Zhu et al., 2018). Our findings have revealed a striking difference in deactivation patterns between our two groups. Our parental history of bipolar disorder only subgroup showed less deactivation than our parental history of bipolar disorder and suicide attempt(s) subgroup. This finding aligns with the literature on activation in the Broca's area in bipolar patients. However, the literature is unclear regarding how activation in the Broca's area is altered due to suicidal ideation or a parental history of suicide. However, it is clear that a parental history of suicide has a different impact on neural activity compared to a parental history of bipolar disorder alone. These results suggest that parental risk for bipolar disorder and suicide attempt(s) may be linked to specific neural mechanisms and highlight the importance of personalized interventions for this vulnerable population.

4.1 | Limitations

In this study, we encountered several limitations that should be taken into account when interpreting our findings. First and foremost, our sample size was small, which may have limited the statistical power of our analyses and the generalizability of our findings. Additionally, we observed an unequal sex ratio in our sample, while we controlled for sex as a covariate in our analyses, this may have decreased the generalizability of our results. Future studies should strive to recruit more balanced samples and consider the potential impact of sex-related variables on their findings. Additionally, while there is growing evidence suggesting a link between bipolar disorder and visual cortex abnormalities, research in this area is still in its early stages and faces several limitations. Most studies to date have used small sample sizes and cross-sectional designs, which may result in false positive findings and conflicting results.

Additionally, childhood maltreatment has been shown to reduce visual cortex volume and activity, and we did not control for childhood maltreatment scores in the present study (Fujisawa et al., 2018). Therefore, the difference in activation seen in the primary visual cortex could be due to childhood maltreatment rather than psychosocial stress, and childhood maltreatment and other forms of early life stress may be more prominent in youth with parental risk for mood and/or suicide attempt(s).

5 | CONCLUSION

Overall, the study has important implications and provides new insights into the relationship between parental risk for suicide and bipolar disorder, specifically behavioral differences and altered neural response to stress. Future research, with a larger sample size, is needed to extend this work to potentially help to develop effective interventions for reducing suicide risk in individuals with elevated risk for suicide-related behavior. By examining behavioral differences in impulsivity, risk-taking, and alcohol use disorders we could identify potential risk factors for suicide. Additionally, by examining the role of altered response to acute stress in young adults with a parental risk for bipolar disorder and suicide attempt(s), compared to those with no parental risk for suicide attempt(s), and longitudinal outcomes future work could shed light on a potential mechanism underlying the parental transmission of suicide risk. These insights could ultimately aid in the development of more effective prevention and intervention strategies aimed at reducing suicide risk in vulnerable youth populations at high risk for suicidal thoughts and behaviors.

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Observing Community: Qualitative Perspectives of Public Parks in Austin, TX

Flavio Ramos

The University of Texas at Austin

Faculty Mentor: Javier Auyero, PhD

This article is an exploratory observation of public parks in the central region of Austin, Texas. Given the historical context of racial based residential inequality in Austin, this investigation considers public parks as a valid setting to observe small scale material expressions of larger systemic inequalities. The premise of this exploration began by identifying literature that depicts social inequality as result of systemic issues that plague local communities through the manifestation of infrastructural and political design, specifically in the case of parks and communities. Systematic literature review and short-term ethnographic inquiry identify an interdisciplinary, exploratory, and empathetic approach to investigate the cultural and social geography of a region. A broad question that inspires this research considers how an integrated approach of sociology, anthropology, history, and human centered design can combine to observe community design through qualitative inquiry. The main research question asks how quality and accessibility of public parks in different neighborhoods affect the cultural experiences of diverse communities in Austin.

Keywords: exploratory observation, systemic inequalities, qualitative inquiry, integrated approach, cultural experiences

Introduction

For the purpose of this project, methods and design serve as preliminary identification of park environments for further data retrieval and in-depth interviews. Future expectations for this research include long-term ethnographic observations as well as in-depth interviews with local park attendants to gain a deeper understanding of their experience with public space.

Project Relevance

The premise of this investigation was largely inspired by the work of sociologist and ethnographer Dr. Javier Auyero, as well as several of his dedicated graduate researchers. In their exploration, *Invisible in Austin: Life and Labor in an American City*, Dr. Auyero and his students depict social suffering in Austin as a result of systematic and uncontrollable social, political, and economic forces. The narratives guide the reader through what public sociology looks like in practice, what it can achieve within a community, and how to accomplish similar ventures. Through twelve separately unique vignettes of local residents, their stories exemplify what it's like to live and make a living in a city with rampant inequality.

Through inspiration from *Invisible's* observations and methodologies, direction of this research was aimed at identifying ways in which to visualize specific local inequalities. Before beginning user interviews and in-depth ethnography, this research objective of this venture focused on identifying environments in which inequalities manifest in public space. Brainstorming ideation identified a plethora of indicating environments such as public libraries, restaurants, schools, hospitals, grocery stores, commercial centers, recreational centers, and public parks. Because the aim of this research was centered towards observing community design and uplifting resilience, public parks became a tool for qualitatively measuring the social, cultural, and political characteristics of a public space.

Public parks, unlike other public spaces, act very uniquely as socio-cultural facilitators in the sense that they enable the acts of play, activity, physical and mental health, and leisure. With the developments of climate change and heat intensification, coupled with the monotonous isolation caused by the Covid-19 pandemic, parks began to seem less like material structures and more like tools for mental wellness regulation and physical wellbeing. Additionally, parks, much like other public outdoor spaces, greatly influence the cultural ambiance and cultural geography of a region as they are a center for community interaction and cohesion.

Objective and Expectations

Because the timeframe for this investigation was limited to three months during the summer of 2022, the expectations for this project were to act as preliminary findings that would develop into a larger and more rigorous exploration of public parks in Austin. Both the objective and expectations for this research were designed to be vague and ambiguous so that inquiry could develop creatively without constraint, generalization, or bias. Additionally, because ethnographic methods involve rigorous immersion into the art and practice of observation, open-ended inquiry allowed for a more vigorous short-term analysis of public surroundings. The end goal of this work was intended to be exploratory, and the premise was to learn through consistent and direct observation of the field environment. Social inequality is not static or monotonous; therefore, the development of this investigation was rapidly morphing and evolving to reflect what had been learned or observed as time continued. To be succinct, however, one of the expectations of this work was to investigate a local community through the lenses of sociology and design.

Literature Review

This review includes a range of literature focusing on some of the built inequalities in Austin, Texas, material inequalities in public parks and green spaces, gentrification, environmental justice, and social ethnographic research methods. Though literature quantitatively and amply addresses contemporary issues concerning material or spatial inequalities within cities, few reviews provide an exploratory qualitative framework for interdisciplinary ethnography that illustrates complex social, cultural, and historical factors that contribute to the modern reproduction of cultural inequalities. This literature review synthesizes articles that describe the underlying implications of community and park design, especially as they relate to local communities that are constantly developed and displaced. Initially this review began with the purpose of identifying a holistic and replicable framework for public park quality assessment. However, throughout the course of observation, the aim instead changed towards gathering research that is exploratory, interdisciplinary, and most importantly descriptive of the broader local historical inequality in Austin.

Systematic search of this literature involved use of the University of Texas online library system. Main search terms included residential inequalities, material inequalities in parks and greenspaces, gentrification, environmental justice, and social ethnography all within the geographic context of Austin, Texas. In order to pertain to this review, each article had to in some way acknowledge or reference the historical and present context of systematic built inequality in Austin, Texas. One to two articles were selected per category based on their overall relatability in illustrating social inequality in a qualitative, descriptive, and or interdisciplinary way as it pertains to Austin.

Residential Inequalities and Gentrification:

Uprooted: Residential Displacement in Austin's Gentrifying Neighborhoods and What Can be Done About it by Heather Way, Elizabeth Mueller, and Jake Weggmann examines the history of racial segregation and exclusionary zoning in Austin. The authors argue that the city's zoning policies were initially designed to separate white and non-white residents for political and economic gain, leading to the development of still existing segregated neighborhoods between East and West Austin. The authors also provide a detailed account of the various legal and political battles that have taken place over the past several decades which have significantly challenged discriminatory housing practices. Additionally, the authors highlight some of the ways in which race and poverty continue to intersect housing policy and that a more equitable and inclusive approach is needed to achieve housing justice. In its entirety the document is highly specific and detailed. For the purpose of this review, it is used as reference and validity for claims of displacement and residential inequality in Austin.

In terms of gentrification and displacement, the authors of *Uprooted* specifically analyze the impact of gentrification on low-income communities and communities of color in Austin, Texas. The authors examine the consequences of gentrification, which include the displacement of long-term low-income residents, loss of community

cohesion, and the erosion of cultural and historical significance. Overall, the work provides deep insight into the intersection of race, class, and urban development in Austin, highlighting the need for more inclusive and equitable approaches to development and design. The main takeaway from these articles is that gentrification can reinforce social and economic inequality and that community-led participatory solutions are necessary to address the challenges faces by historically marginalized communities. The conclusion of these articles highlights the urgent need for community-led and participatory approaches to urban development, which prioritize the needs and perspectives of historically marginalized communities.

Material Inequalities in Parks and Greenspaces:

Analysis of Gentrification and Green Spaces in East Austin, Texas by Carly Fordyce provides quantitative or statistical insights into the material inequalities in access to parks and green spaces in Austin, Texas. Fordyce examines the factors that contribute to the unjust distribution of green space in Austin, including neighborhood demographics, education levels, income levels, and the historical legacy of racial segregation. The author explores the concept of environmental justice and its application to park access and distribution, with a focus on how that affects racial and ethnic disparities. Overall, the article provides contextual evidence that unequal access to green spaces is not only an issue of spatial or geographic distribution but also a matter of environmental justice and social inequality. It is made clear in the article that access to parks and green spaces should be considered a basic right and that more efforts are needed to ensure that marginalized communities have equal access. The author underscores the need for more equitable distribution of urban green spaces, which can be achieved through policy changes, community advocacy, and grassroots organizing.

Environmental Justice:

The Quest for Environmental Justice by Robert Bullard argues that marginalized communities, particularly communities of color and low-income communities, bear a disproportionate burden of environmental hazards and pollution. He contends that environmental racism is a form of discrimination that perpetuates and exacerbates social and economic inequality. Through case studies and statistical analysis, Bullard demonstrates that environmental injustice is not a random occurrence, but a systemic and intentional practice of placing hazardous facilities and toxic waste sites in or near communities of color and low-income communities. Bullard calls for a comprehensive and holistic approach to environmental justice that incorporates issues of social and economic justice, political empowerment, and community organizing. He emphasizes the importance of community participation and decision-making in environmental planning and policy making. The book concludes with a call to action for policymakers, activists, and citizens to work towards creating a just and sustainable future for all.

Social Ethnography:

Peter Weiss' book *Learning from Strangers* provides a comprehensive guide for conducting qualitative research through ethnographic interviews. The book emphasizes the importance of establishing a rapport with research participants, active listening, and reflexivity in the research process. Weiss also discusses the use of mixed multiple

methods in qualitative research and provides practical advice on data analysis and presentation. Overall, the book provides a useful framework for conducting qualitative research through in-depth interviews. In *Invisible in Austin*, Javier Auyero and his team use ethnographic methods to examine the lives of the urban working class in Austin, Texas. The book offers a detailed portrait of the daily struggles and challenges faced by residents of low-income neighborhoods, including job insecurity, housing instability, and limited access to social services. The authors use a combination of participant observation and in-depth interviews to illuminate the experiences of the “invisible” residents of Austin. The book provides valuable insights into the use of ethnography in social research and highlight the importance of listening to the perspectives and experiences of marginalized communities. Both of these works emphasize the importance of ethnography, specifically in knowing, understanding, and reciprocating the experiences of marginalized groups. These works also emphasize the importance of reflexivity, listening, and observing in qualitative research, as researchers must remain aware of their own biases in order to fully understand the experiences of research participants.

Initially this review set out to identify frameworks for assessing public park quality in terms of accessibility, materials, safety, shade, and greenery. However, as the literature review went on, and following initial ethnographic observations, the aim instead shifted to synthesize literature that paints a picture about how and why some of many inequalities exist in the material world of Austin, Texas. Additionally, this review serves as a background reference for further ethnographic observations. Though this review is not intended to address a major gap in literature, it served to direct the exploration towards understanding how broader social and spatial inequalities influence cultural practices.

Methodology

Study Design

Preliminary results gathered during this investigation focus on qualitative observations that communicate specific park environments, their general user experience, and cultural or social factors that may be relevant to community cohesion. Because this inquiry is entirely preliminary this work is under review for Institutional Review Board approval, therefore no interviews involving human participants have been conducted yet. Brief conversations with park attendants were used to direct observations, however, those statements were not recorded and will not be published. Said conversations did allow the researcher to inform attendants of the nature and scope of this exploration, consent was gathered orally and informally to adopt their anecdotes as anonymous guiding observations.

Methods of observation were open to holistic qualitative interpretations of the park user experience. More specifically, this approach involved four weeklong observations of various factors like parking navigation, park entrance accessibility,

material characteristics of park structure, amount of shade and greenery, park size, amenities, cleanliness, privacy and safety, range of activities, and demographic diversity or inclusion. Overall, the main idea was to observe patterns and convey an accurate narrative that would succinctly communicate a broad range of factors about the parks in question.

The selection of parks for observation were selected according to the Urban Displacement Project's map of communities vulnerable to gentrification and displacement. The map identifies the Eastern Crescent, also known as East Riverside Corridor, as a large region with high susceptibility to early and late gentrification. Considering that the eastern region displayed fewer public parks on digital maps compared to West Austin, intrigue arose to compare and contrast the differences between park quantity, quality, and access. The selection of parks for detailed observation and further research was minimized to four parks, two from east Austin, and two from west Austin. The final parks reported in this article are highly rated and popular parks such as Zilker Park, Pease Park, Givens Park, and Parque Zaragoza.

Ethnographic observations

Through direct, personal, and rigorous exploration of public park environments, one may discover that the difference between park typologies, qualities, access, and overall size are not too different between East and West Austin. However, various nuanced differences do arise in the overall scope of park user experience on the basis of quality and amenities, safety, and level of community inclusion. For example, obvious distinctions arose in the range of activities and amenities available in some parks. Other noticeable differences were in terms of how said parks were utilized. Every park proved to be unique in the ways it provided utility to nearby residents and constituents. Every park proved to be socially and culturally significant to that specific community.

Zilker Metropolitan Park: Austin's Beloved

Zilker is considered one of Austin's most popular and beloved public park attractions. The amenities are practically endless with a variety of hiking and bike trails, acres of open space, shady trees and picnic areas, a scenic view of downtown, plus waterside access throughout various avenues. The park is substantial in size and has so many amenities that you could basically attend regularly and rarely notice that you're in the same place each time.

Some people come alone to watch the sunset and glisten at the skyline. Others come with their beloved partners, or in large groups to play frisbee or fetch with their dogs. Either way Zilker is not shy of public attention or activity. You can find people there mostly any time of day every day of the week, doing almost everything and anything there is to do. On a regular weekday the surrounding area is highly active, especially in the late afternoons as everyone finishes up with their workdays. Weekends, on the other hand, are a different story and are entirely active at almost any hour of the day. Though there is ample parking, it sure fills up quickly.

Zilker is openly large and practically nestled into the geography of downtown central Austin. It is rather accessible to local residents who live nearby, and even for those who commute from further distances. Parking is limited and at times a bit overwhelming, yet there are still various parking lots in and around the park area. Because Zilker is predominantly open grass field with no paths intersecting the expansive central lawn, residents with walking disabilities may unfortunately not be able to enjoy the venue to its full extent. However, that does not mean they cannot enjoy a wide range of other accessible amenities that are settled within the park like Zilker Botanical Gardens and numerous walking and bike trails throughout the park.

Besides the material characteristics of space, Zilker park exemplifies the precise culture that ignited this research venture into spatial inequality. Within the context of popular and physical culture, Zilker is much more than just a park or a facilitator of exercise to the general public. Zilker park hosts a variety of frequent and widely known events throughout every season, all year long. From Austin City Limits music festival in the fall to local concerts and story times in the summer, Zilker is always contributing to the ambiance that makes Austin so recognizable and distinct from any other city. If you say “Zilker”, Austinites and sometimes people all throughout Texas not only know where it is, but they want to go, explore, and admire. In fact, some residents even travel to Zilker instead of attending their local park because it hosts so many attractions that are not necessarily accessible in many other parts of town.

In terms of overall user experience and safety, Zilker is rated one of the best parks in Austin according to the Austintexas.gov. It is clean and has more than enough activities and events to keep people busy. But the importance of this park is definitely transcendent of material structures. Zilker is an expansive open environment that allows for the intersection of various cultural, social, and physical, activities.

Pease Park: A Central Gem

Pease Park is an attractive and popular environment for all to enjoy. There are a variety of bike and walking trails, volleyball courts, basketball courts, tennis courts, a playground for children, and even an interactive and universally accessible sculpture designed to spark community attraction. It doesn't end there, however. As you walk throughout the park, there are various picnic tables covered by enormous shady trees. There are dozens of benches and shaded areas to sit and relax, and even a selection of interactive games like chess, checkers, and cornhole.

The ambiance of Pease Park is quite peaceful as clearly indicated in the name. The Park facilitates a safe and healthy environment for all ranges of family or individual activities during regular hours. Throughout the observations of Pease Park, there was almost always a weekly child's birthday event, or large family gatherings that amplified the positive atmosphere of the park.

The overall theme at Pease Park is that of rehabilitation and preservation of the park's cultural, recreational, and natural characteristics. There are herb gardens and walkways adorned with wildflowers, labeled, and chained off so as to maintain them safely. Murals and artworks hand along chain link fences used for kickball and baseball. A creative snow cone truck stands under the shade as a nostalgic icon of delicious play

and diversion. Pease Park stands out most importantly for its shaded hiking and bike trails that provide immediate and direct feeling of being away from the city. Though directly on one of Austin's busiest streets, the fortress of trees and activities distracts the fact that attendees are still in a metropolitan area.

Givens District Park: A Beacon of Hope

Givens district park is referred to as East Austin's last beacon of hope by one park attendee as it stands split between the authentic ownership of original residents-- and the possession of new occupants and development. According to one passionate resident that grew up when the park was the community's go-to place, every Sunday everyone would go to Givens and celebrate as a community like it was a grand party. The gathering was considered a community event, and everyone who wanted to have fun would hang out while listening to good music and spending time together as a community. It was the place where kids would swing and run around all day playing Back then everything was much more lively apparently.

At first glance during the hot summer afternoon, Givens Park stands out as a park with slightly less public activity both within and around the park grounds. However, as one begins to enter the park, they are met with a wide variety of public amenities unmatched even by that of Pease and Zilker Park. There is a well beloved recreation center where children can play and take classes after school or during the summer, a playground, several canopies, and performance stages. There is also a large and attractive public pool, tennis, and basketball courts, as well as 40 acres of ample well shaded greenery.

The thing that stands out most about this park is not yet visible in the physical appearance of Givens Park, but more so in the surrounding implications expressed through the "renovation" of the community. The intrusion of unwanted development and displacement have begun to interject into the social network of East Austin and its community cohesion. This injection of white-centered spatial aesthetics is made apparent in East Austin as it is juxtaposed to the long-standing and traditional cultures that are struggling to remain.

Over the last few years, there have been efforts on behalf of the city of Austin public parks to renovate and restore this specific park environment. Various of these renovations are ongoing and seem to be reflective of greater attraction to the surrounding community. Whereas some residents are grateful the community is receiving its well deserved upgrade, other residents feel the renovation is working to destruct the community culture.

Brief conversations and investigations of online reviews highlight a dueling trend between the residents that have lived there for years, and newer residents that are recently entering the community as a result of recent development. On one hand, there are original residents that comment on the nostalgia and greatness that this park facilitated and still facilitates. On the other hand, there are new residents that are likely a direct result of community development that disagree with the culture that have rectified this park as a public community beacon.

Parque Zaragoza: A Community for All

Parque Zaragoza remains an environment to explore further, as observations here were normally brief considering and respecting the privacy of those inhabiting the space. This specific environment is unique in that over a year or two ago, a small section of the public park was informally transformed into a community for several houseless peoples.

Upon first glance of the park's south entrance, there are a myriad of community clusters surrounding campfires, clothing lines, and outdoor furnishings. It appears as if the park is still facilitator to various social and cultural activities, only it is becoming increasingly less active as a family environment for some local attendants and nearby residents. Some online reviewers showed intense dissatisfaction with the fact that the community park was overwhelmed by a non-local population. Other reviewers didn't mind the fact that the park was facilitating a human need, they were more concerned with the fact that there are no public restrooms. Many parents comment that this park is ideal for their children and many families love to host birthday parties here on the weekends.

When entering the neighborhood, immediate indications of early gentrification arise in the contrast between new sterile architecture and long-standing traditional homes. One can't help but wonder what the future of this park will look like as the forces of displacement are already infringing on this already established community. Some may say they welcome the "facelift" to the park and surrounding region because their kids don't feel safe; others may say it leaves their kids with no more proximity to play at all.

Limitations and future concerns

Because this work is preliminary no interviews with attendees were conducted or recorded, therefore the determination of the overall park experience is limited to my physical observations during the summer months, internet ethnography, and brief conversations with attendees. In other words, the duration of observations and depth did not allow for a *holistic* communication of how park narratives pertain to overall cultural experiences of inequality within Austin. Additional limitations include the size of the sample of public parks. Going further, the scope will increase to include larger sample of parks, as well as longitudinal observations and in-depth interviews with park attendants. Lastly, the observational approach will require more operational characteristics to identify more specific indicators of park features and user experience both in literature review and methodology.

Conclusion

It is important to include that this exploration of public space is not an attempt to explain inequality using the observations of these public parks. This work is an overview of the user experience during the observation of few public spaces to identify and amplify the ways in which spatial differences and inequalities affect cultural

environments and community cohesion. This undertaking is most importantly an attempt to seek out public sociology as local intervention, and to understand through observation and listening. The idea is to discover ways in which academics, professionals, and individuals should approach interdisciplinary research within local communities. This paper therefore acts as a format for venturing local public sociology, human centered design, and social anthropological research using empathy and ethnography.

These parks were not selected because they represent the entirety of public spaces within Austin, nor because they perfectly define what spatial inequality looks like. Rather, the four parks selected serve the purpose of displaying the broad range of qualities that can be seen in physical and intangible expressions of space. Additionally, these parks serve to symbolize how material structures directly impact the nature and relationship of their surrounding communities. Austin is home to hundreds of parks varying in size, typology, accessibility, and proximity. For the most part, many communities do have access to some type of green space or park. However, that access is not always comparable across racial-ethnic and socially divisive boundaries.

Moving forward with this investigation, deeper observations of these parks will act to initiate a dialogue with residents as to how they feel about their environment and what needs, if any, should be met within their communities. At this point, observations made show that inequalities are not linear or deducible to simple differences in material expression. What I learned most importantly is the ways in which information, data, can be captured to understand the social, historical, and future context of a space in order to empathize with the community.

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The Damage Done by School Boards: Analysis of GCISD and its Harm

Jennifer Sanchez

The University of Texas at Austin

Faculty Mentor: Stacey Jordan, MSSW

Parents' educational choices for their children matter greatly. They could choose a bad district and hinder their child's education, possibly keeping them from their full potential. Grapevine-Colleyville Independent School District, a public school district near Dallas, Texas, was set to become a destination district. And it was, for several years. In recent months, the GCISD school board has continuously worsened and hurt the children it is supposed to protect. I will research how a school board with more conservative political ideology can change a school district and how it affects students. I will use the Grapevine-Colleyville Independent School District to analyze these changes.

What Is a School Board?

School boards are in charge of running all schools within a school district, they create policies and make sure rules and laws are followed. The boards consist of members, or trustees, who citizens of the city the district pertains to elect. Their job is to put the "interests of their community's youth first" (Texas Association of School Boards) and govern the schools in the best way that allows all students to thrive. They determine whether a school district becomes a success or failure, as they are the only ones with true control over policies. They create and approve the budget for the year and determine where the money is used and how. School boards all follow and report to "the commissioner of education, the State Board of Education (SBOE), and the Texas Education Agency (TEA)" who "provide leadership and state level administration" as well as "implement state education policy" (Texas Association of School Boards). Although these three groups have a say in policies and management, school boards ultimately have the majority of the responsibility for how schools within a district run.

To become a school board member, one must meet very basic qualifications. An individual must be "a U.S. citizen, be 18 years of age or older, not be totally mentally incapacitated or partially mentally incapacitated without the right to vote, has not been convicted of a felony, and has resided continuously in the state for 12 months and in the territory from which the office is elected for six months" (Texas Association of School Boards). Only individuals who are citizens in the school district's zone can vote for

school board members. However, the majority of people do not vote for school board elections.

The Politicization of School Board Across U.S.

In recent years, school boards have been a way for politically right-winged factions to gain control of their community's politics. After the 2016 election, the United States became politically divisive, and the need to push agendas onto others became common. The easiest way to achieve this? School boards. School boards are "the purest example of democracy our society presents" (Texas Association of School Boards) and is the "most local and easily accessible form of government" (The Center for Popular Democracy). It is the fastest way for an individual to gain access to government and can be used to begin a political career. It is difficult to have access to leadership positions in politics, so those wanting to, right now commonly being "right-wing religious, corporate, and law enforcement actors," turn to school district's to "advance their agendas" (The Center for Popular Democracy).

Although school boards are now a political tool, they have always been a source for "political and cultural debate." Brown and black communities have repeatedly had their rights threatened by school boards. The *Brown vs. Board of Education* decision led white school board members in school districts throughout the United States to use "every available tactic to prevent desegregation and maintain control of schools." They feared diversity and equality and used superiority in school boards to postpone desegregation. Not only did they attempt to push out students, but "pushed hundreds of Black teachers and administration out of their jobs in the first decade following the Brown decision" (The Center for Popular Democracy). During the 1990s, again the "far-right began battling out culture war issues" in school boards. These included policies involving "sex education, prayer, creationism and LGBTQ policies."

Board Member Election Funds

The conservative takeover of school boards was successful because it was well funded. Most conservative individuals who recently ran for school board were backed by conservative groups that have large amounts of money to give to school members willing to promote their agenda. In 2021, there was a significant increase in recalls, over two times the amount of recalls in any other year in the past decade. There were 92 "attempted school board recalls," signaling the change in school board politics.

During my research, I interviewed Dr. John Doughney, who worked in public education for almost forty years and was head of the LEAD program, or Leading Excellence - Action Driven, at GCISD, Dr. Doughney thoroughly explained the process of the changes that have occurred in GCISD for the past two years, and where they

began. In GCISD, four new board members who campaigned in the last two years received about \$50 thousand each in donations from Patriot Mobile Action. During past elections, the majority of candidates campaigning only had between \$2 thousand and \$5 thousand to campaign with. Most of this money would go to small campaigning measures, like yard signs, shirts, etc. However, with \$50 thousand, a candidate can pay people to walk around with flyers full of radical misinformation, canvassing door to door, and spreading misinformation that pushes people to vote for their candidate. The misinformation surrounding Critical Race Theory, “pornographic” books, or the LGBTQ+ community instill fear within Republicans, and they vote for the school board members who claim they will “protect” them.

Patriot Mobile labels itself as “America’s only Christian conservative wireless provider” (Hixenbaugh 2022). It is a “Texas-based cell phone company” run by Glenn Story in Grapevine Texas. It claims to have an assignment from God “to restore conservative Christian values at all levels of government - especially in public schools” (Hixenbaugh 2022). All eleven candidates Patriot Mobile supported with funds and resources won their races, including four who are now on the GCISD school board.

Demographics

In 2020-2021, according to the Texas Tribune, GCISD had “13,890 total students.” The school district is majority white, with a 53% White student body, 24.5% Hispanic, 10.2% Asian, and 6.4% Black. Almost a fourth of students, 24.3% are economically disadvantaged, and around 22.7% of students were at risk of dropping out of school between 2020-2021. “11.3% of students were enrolled in bilingual and English language learning programs” at GCISD as around 10% of students had “limited English proficiency” and 20.4% of the students were determined to be “gifted and talented.” Additionally, teachers in GCISD are majority white as well. 84.6% of teachers are White, 10% are Hispanic, and 2% are black.

LEAD 2021

Grapevine-Colleyville School District was a thriving school district before 2021. In 2011, GCISD decided to implement the LEAD 2021 plan. This was a ten-year plan to make the school district into a destination district. Dr. Doughney was in the LEAD 2021 Committee and explained the focus of this program was to address the needs of all student groups. There was a tremendous growth of innovative programs including STEM and AVID (Advancement Via Individual Determination), implemented within the first year of this program alone, along with digitizing six classrooms in the school district. The next two years, the committee implemented two-way bilingual (dual) classrooms in three of the districts’ elementary schools as well as ASPIRE Academy, a gifted and talented program and IUniversity Prep, a public magnet school. The following years, it created infrastructure like the GCISD Technology Education and Career Center to help

students with the college application process and career choices. Collegiate Academy, a high school college program that allows graduating students to receive both a high school diploma and associate degree, opened. In 2016, GCISD states they became “District of Innovation” and in 2018 and 2019 it was named a “Dallas Morning News Top 100 Workplace.” This is a fraction of the programs and infrastructures created through the LEAD 2021 plan, and in 2017 the district contacted Dr. Doughney again to ask for help to revisit the plan and extend it after 2021.

LEAD 2.0

With the emerging end of LEAD 2021, GCISD decided to partner with the Schletsky Center to create Lead 2.0, but implemented a strategic change agenda. With LEAD 2021, the purpose of the program was centered around creating programs, but LEAD 2.0 looked at how the district can change. With a strategic change agenda, the LEAD 2021 committee would take a closer look at GCISD to see if the school district has the capacity for the changes they desire. To determine these changes, GCISD created a “discovery team” of about 60 people and had “focus groups” with hundreds of stakeholders including teachers, staff, and parents, explained Dr. Doughney during our interview. The school district asked the focus groups what their hopes for GCISD were, what they wanted from the school district, and what their dreams for the district were. This data was collected and then examined to create LEAD 2.0.

The Election of the School Board

The GCISD school board consists of seven members. These members include the President Casey Ford, Vice-President Shannon Braum, and members Becky St. John, Tammy Nakamura, Kathy Florence, Coley Canter, and Jorge Rodríguez. As of July 2022, four of the members, Braun, Nakamura, Spradley, and Ford, have a clear conservative agenda. They all were elected with the help of Patriot Mobile. As mentioned, with the funds provided by Patriot Mobile, the candidates used “thousands of political mailers warning that sitting school board members were endangering students” (Hixenbaugh 2022). This, along with low voting rates for school board elections, allowed their easy victories.

Throughout the U.S., school board elections have the lowest voter turnout rate, even though school board members are the “largest group of elected officials in the country” (Devine 2022). According to the National Bureau of Economic Research, “nearly 90,000 school board members oversee the education of more than 50 million public school students” and are in charge of the “allocation of \$600 billion in expenditures.” According to the National School Board Association, “voter turnout at school board elections is often just 5 or 10 percent.” In 2015 at Portland State

University, they did a project where they examined the largest cities in America and found that “in 20 of America’s 30 largest cities voter turnout for electing community leaders was less than 15 percent” (Devine 2022). Between 2021-2022, school boards in the United States made decisions about “censoring teaching, display of symbols, mental health, federal COVID recovery funding, school safety, how reading is taught, and book banning” (Devine 2022). Patriot Mobile took over “Southlake, Keller, Grapevine, and Mansfield”, and their candidates in GCISD are pushing people out of the school district.

The Importance of Equity

LEAD 2021 was vital for the success of students in GCISD, because it focused on equity. Students who were economically disadvantaged were not the only ones uplifted and supported, those who had privileges were as well. The district elevated all students, and this was clear with the programs created. ASPIRE Academy is a program for highly gifted students that pushes them academically. GCISD has over 550 students in ASPIRE Academy who are considered “high aptitude” students. The academy challenges and guides students academically to provide them with opportunities that they otherwise would not be exposed to. On the other end of the scale, Collegiate Academy was created for students of low socioeconomic status to be able to graduate with both a high school diploma and associate degree. Collegiate Academy opened in 2014 and partners with Tarrant County College to “blend high school and college curricula simultaneously.” Additionally, AVID, Advancement Via Individual Determination, is a program in certain elementary and high schools in GCISD with a “mission to close the opportunity gap by preparing all students for college and career readiness.”

Those in the upper class or who have more privilege, usually believe equity is taking from them. School member Shannon Braum herself has said “we have to be anti-equity and anti-social justice” during a school board meeting. She believes that equity means they have to give up something, so they refuse to support equity. Dr. Doughney explained they have a “Us v. Them mentality”, and don’t realize the truth of equity. Equity is being fair to all groups, and that is exactly what GCISD was doing with the Lead 2021 program. They uplift both the students who are advantaged and those who are disadvantaged. However, if the school board begins to fight against equity, the underserved will be the first to suffer from the consequences.

Programs like Collegiate Academy and AVID will be the first to disappear.

GCISD Changes

The school board has implemented several changes in just the last two years. In 2020, the principal at Colleyville Heritage High School (CHHS) received criticism from the four right-leaning members regarding an email he sent out to the school. After George Floyd was murdered in Minnesota, the principal James Whitfield “emailed a

letter to parents and staff in which he wrote that systemic racism is alive and well” (Lopez 2022). Whitfield was the first Black principal at CHHS and was a voice for people of color in GCISD. “Only 1% of residents” in Colleyville identify “as Black or African American” and Colleyville residents’ “median household income tops \$150,000.” It is a very privileged, wealthy, white, town, and they were strongly opposed to Whitfield and his email. Dr. Whitfield was put on “paid administrative leave” after being accused of “promoting critical race theory” (CRT). However, he decided to resign as principal of CHHS and the “school board unanimously accepted.” The GCISD school board’s four right-leaning members oppose teaching CRT in their schools. In August of 2022, the school board, in a 4-3 vote, adopted “a policy that bans the teaching of critical race theory and implements a strict review process for library books” (Young 2022). The Scholastic Book Fair, a book fair adored by students nationally in schools for decades, was canceled for the 2022 school year by GCISD because “the company didn’t provide a full list of every book it would sell at the fair” (Young 2022).

Along with people of color, GCISD has continually harmed the LGBTQ+ community as well. During the same school board meeting that banned CRT, the board adopted a policy that allowed teachers to reject student’s pronouns in school. Even if the student’s parents approve of their pronouns and ask the teacher to use them, the teacher can deny the request. Additionally, the board created a policy that bans transgender students “from playing sports” and a policy that requires transgender students to “use the bathroom that aligns with their sex assigned at birth” (Lopez 2022). With Ford, Braun, Nakamura, and Florence on the school board, GCISD will continue to exclude transgender youth.

Teachers have begun to leave GCISD in the highest numbers the school district has ever seen. Between January and July of 2022, over 240 staff members left GCISD for varying reasons. Several moved to neighboring school districts, many chose to retire, and several just stated they are leaving for “personal” reasons. With the environment school board members are creating for teachers, it is not surprising that teachers are choosing to leave the district, even if they have been working with the district for several years. In July of 2022, Trustee Nakamura, during a school board meeting, “told the forum that she has a list of teachers who need to be removed from the classroom because they’re poison” (Greenstein 2022). By “poison” she means that these teachers are advocating for themselves and their students, and that they do not accept the conservative agenda she wants them to follow. A video even emerged of Nakamura talking about Dr. Whitfield and saying he was “ousted as principal” due to “his activism.”

Another current issue caused by the school board involves budgeting and finances, and this is affecting the district’s faculty, parents, and students. A budget is normally approved by the school board in June. The budget is determined based on student attendance in the following school year, so normally the school board has to predict the number of students they believe they will have. Due to this, Dr. Doughney explains, you are “approving a budget with a lot of unknowns” and because of this, most years the school board has a deficit budget. A deficit budget “occurs when expenses

exceed revenue”, and GCISD usually has one. When the bank approved a deficit budget for GCISD in the past 8 to 10 years before the current school board, they never had to go into their savings. However, in the last two years, “GCISD approved a budget that did not have enough income to cover so they went into their savings.” This caused the bank to no longer give GCISD as much money as in years past.

Conclusion

School boards are being taken over by the radicalized right-wing all around the country. These right-wing politicians are prioritizing their own agenda instead of the students' success and are harming several marginalized communities. People of color, the LGBTQ+ community, and anyone with a differing opinion than the school board are hurt throughout GCISD. A once thriving school district is failing because of its school board members, and the number of students and faculty leaving is concerning for the district's future. By advocating for change and uplifting marginalized voices, hopefully GCISD can once again prioritize the values that made it excel.

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About the Authors

Mariela Jiménez Rivero

Mariela is a current Ph.D. student in the nutritional sciences department at the University of Texas at Austin, where she also received a bachelor's degree in chemistry. Her undergraduate research experiences had a formative influence on her research interests and academic pursuits, which include investigating the factors influencing dietary habits and diet quality of Hispanics that lead to the development of chronic illness. She hopes that through her research she can work on evaluating and delivering interventions to improve nutrition literacy and health outcomes in Hispanic communities. In her free time, she enjoys spending time with friends and family. Her hobbies include playing sports, going on walks with her puppy, and trying different restaurants and coffee shops in Austin.

Johnathon Briones

Jonathon Briones hopes his work can catalyze a change for more inclusive learning environments and equitable school assessment for marginalized students in the United States. Born and raised in Texas, Briones attended the University of Texas at Austin earning his B.S.A in Mathematics along with minors in Computer Science and Statistics. Briones has committed his work to understanding the disparities present within mathematics education specifically focusing on secondary school, the transition to college, and the role of high school calculus. Additionally, he looks at how school systems might exacerbate racial stereotypes through the use of racialized tracking and inequitable course placement. In his free time, Briones loves to play video games, watch movies of all genres, and spend time with loved one's. He also enjoys crafts like knitting, gardening, and is an avid tennis fan (Nadal being his favorite player).

Tiara Conley

A passion for revealing the truth, Tiara Conley works to understand the positionality of Black women in US contemporary contexts. Her studies in African and African Diaspora and Sociology combined with her training in the McNair Scholars program equipped her with the tools needed to analyze the experience of Black women and Professionalism. Aside from her research, Tiara enjoys reality tv shows, self-care activities, and learning new things.

Leo Ramirez

Leo Ramírez is an undergraduate student (junior) at the University of Texas at Austin majoring in Honors Humanities and History. Part of the McNair Scholars Program, Ramírez loves all-things research, with academic interests in race and state, national and racial narratives, and intellectual history in Latin America. Transferring to UT from Austin Community College, Ramírez grew up in Austin and enjoys staying involved with local and university governance, with interests in education equity and disability advocacy.

Nour Kassem

Nour El Hoda Kassem, an aspiring scientist from Baghdad, Iraq, immigrated to the United States at the age of 7. Despite the language barrier she initially faced, her passion for mathematics and science remained unwavering. In fact, it was within the realm of numbers and scientific exploration that she discovered solace and purpose as an immigrant. From her early years, she harbored an unwavering desire to become a scientist, dedicating herself to gaining practical experience within diverse research laboratories. Her endeavors spanned various areas, including endometrial cancer research, animal behavior in mosquito flies, and her personal favorite—research in neuroscience, mood, and addiction. Each project further fueled her curiosity and ignited a thirst for knowledge. During her time at university, a profound passion for neuroscience and psychiatry took hold of her academic journey. Fueled by an innate drive to understand the complexities of the human brain, she honed my research focus and dedicated herself to unraveling the mysteries that lie within. She plans on pursuing a Ph.D. in nursing—a research-based doctoral degree that intertwines her deepest passions: medicine, neuroscience, psychiatry, and research. She is driven to shape the future of neuroscience, advancing our understanding of the brain and its impact on mental health. She is eager to contribute to the shaping of the neuroscience field and make a lasting impact on the body of literature within it. She aspires to pave the way for breakthroughs in our understanding of neurological disorders and mental health.

Flavio Ramos

As Flavio Torres Ramos writes, he aims to bring awareness to social and cultural issues that are too often swept under the rug. His goal is to integrate his multiple passions of sociology, writing, culture, and urban design and architecture into meaningful and illustrative narratives that amplify marginalized and underrepresented voices. Flavio received his B.A. in Sociology with a minor in Architecture and a certificate in Design Strategies and he has committed his career to using art and research as a tool for positive communication, advocacy, and social activism.

Jennifer Sanchez

Jenny recently graduated from UT Austin with a Bachelor's in Social Work and BA in Government. She has a passion for helping marginalized communities, and hopes to have a career working with this population using her knowledge in both fields. She is pursuing a Masters in Social Work and a Masters in Public Affairs at UT Austin in the Dual Masters program. She has gotten a taste of working in public policy when she participated in programs like Washington Calling, Student Government, and through her internships at UT System and HM Consulting. She is from Dallas, Texas, but has grown to love Austin and its crazy city scene! She cannot wait to be here a couple more years and get to learn more about Austin and eat all the yummy food it has.