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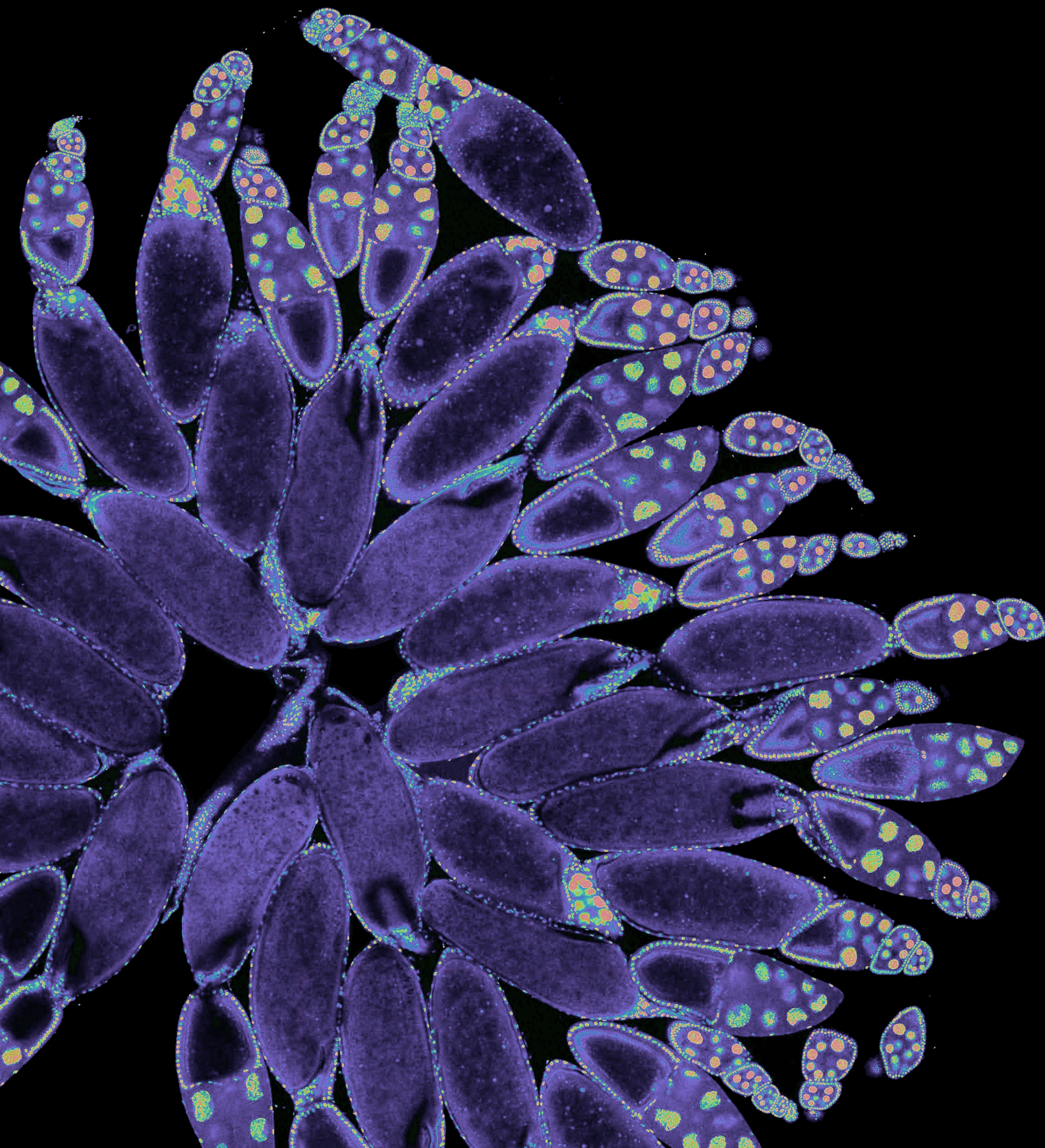

The Washington University Journal of Undergraduate Research

Vol. 1 No. 1 | May 2025

WUJUR (the Washington University Journal of Undergraduate Research) is a student-run organization and peer-reviewed journal dedicated to student research and the discovery of knowledge across all disciplines at WashU.

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Any field, any discipline, any WashU student.

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WU Journal of Undergraduate Research

May 2025

To the WashU Community,

The *Washington University Journal of Undergraduate Research* was founded in the Spring of 2024 with the vision of promoting the many remarkable research works developed by WashU undergraduate students.

When we started this journal, we recognized the great abundance of research produced by WashU students at undergraduate symposia and through theses—exciting works which, after their presentation, often faded into the abyss. We believed that *WUJUR* would serve as a place where students could share their research in a permanent publication, while gaining skills of their own, and inspiring others. *WUJUR* would foster student excellence, passion, and curiosity.

Now, a year later, we reach our primary milestone. Along the way, we have been met with great enthusiasm from so many peers and professors who have wholeheartedly endorsed our mission. We want to extend our deepest thanks to all the members of our Executive, Editorial, and General Boards for their dedication to realizing this vision. We would also like to extend our heartfelt gratitude to the individuals and organizations outside of our editorial team who played a crucial role in bringing this journal to life.

We give special thanks to: *Micah Zeller*, for his legal guidance, instrumental work shaping our journal's policies, and for promoting our journal; *Anthony Smith*, for his enthusiastic support and for promoting the journal through the Biology Department; *Corinna Treitel and the WashU History Department* for their generous monetary contribution, allowing us to print physical copies this semester; *Lori Markson and Diana José-Edwards*, for serving as our Faculty Advisors and for their critical contributions to the formation of the journal; and *Sai Prem*, for his important contributions to the journal's conception and continued support.

We are incredibly excited to present the first edition of the *Washington University Journal of Undergraduate Research*. This issue contains nine remarkable articles and two features across a wide range of disciplines, from astrophysics to intersectionality, from economics to biology. It is the result of countless hours from our Editorial Board, Staff Editors, Peer Reviewers, Authors, late nights, and too many emails.

In a time where research is being challenged in an unprecedented manner, we believe that our message and mission are more pertinent than ever. Our journal is truly reflective of the passion, curiosity, and tenacity of students and researchers. Thanks to the many friends who continue to support us. This journal would not be possible without your generosity, encouragement, and dedication to advancing student research. This is only the beginning!

Sincerely,

Cedric Bruges **Daniel Chen**

Editors-in-Chief

Call for Submissions: Fall 2025

Looking to publish your own work?

WUJUR will open submissions for its next edition, Vol. 2 No. 1, at the beginning of the Fall 2025 semester. Eligible materials include original research publications, posters, theses, and review articles.

We invite you to take this exciting opportunity to share your work with the broader WashU community and beyond. By submitting to WUJUR, you will gain recognition and valuable experience, while contributing to a longstanding tradition of undergraduate research at our university.

Any field, any discipline, any WashU student.

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Outstanding Impact Award

For research with demonstrated potential for societal or disciplinary impact

WUJUR is pleased to present the Vol. 1 No. 1 Outstanding Impact Award to *Cook et al.*, of WashU Satellite, for their manuscript titled:

AIRIS: Pushing the Boundaries of GRB Optical Afterglow Observation

Awarded for demonstrating exceptional potential to make a meaningful impact outside the university setting, *Cook et al.* exemplify how undergraduate research can connect disciplines, inspire change, and drive innovation at WashU and beyond.

Founded in January 2024, WashU Satellite is the university's only space mission engineering team. Consisting of physics majors, electrical, systems, computer, software, and mechanical engineers, they reflect the power of interdisciplinary collaboration to answer important questions. The Satellite team now consists of more than 40 members. They work closely with the university and are developing multiple space-bound projects, including AIRIS.

With Help From

Micah Zeller

Funded By

WashU History Department

WashU Student Union

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ORIGINAL RESEARCH

AIRIS: Pushing the Boundaries of GRB Optical Afterglow Observation

WashU Satellite
Ben Cook, Sophie Fendler, Aavik Wadivkar, Isabella Shultz, Nathaniel Hayman, Joe Billips, Owen Cromly, Jack Galloway, Owen Nieuwenhuizen, Geoffrey Goffman, Eduardo Teixeira, Oliver Yeaman, Wilson Gao

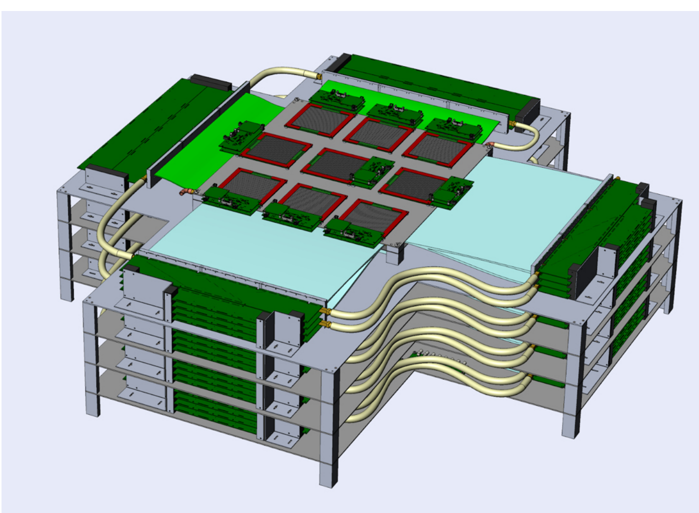
Gamma-ray bursts (GRBs) are the most energetic electromagnetic events in the universe, and although high-energy gamma-ray observations have provided significant insights, the mechanisms of GRB origins remain unclear. More study of their afterglows, the broad-spectrum radiation following a GRB, is required for further understanding. The Antarctic Demonstrator for the Advanced Particle-astrophysics Telescope (ADAPT), a NASA mission led by James Buckley of the Washington University in St. Louis Physics Department, was developed to address this question. Using a high-altitude weather balloon over Antarctica, ADAPT is designed to demonstrate a Compton scattering detector for a future space-based gamma-ray and cosmic-ray observer. Planned for a December 2026 flight, ADAPT will provide unprecedented sensitivity and a wide field of view, producing localizations and polarization constraints on a few GRBs in seconds. However, ADAPT alone cannot obtain precise GRB localization or capture optical afterglows, limiting its ability to fully capture these bursts. AIRIS (ADAPT Incidence Resolution & Imaging Subsystem) is an optical telescope mounted on the same platform as ADAPT with the ability to quickly reposition itself after a detection event. When ADAPT detects a gamma-ray burst (GRB), AIRIS quickly repositions itself, slewing at up to 30 degrees per second to refine the GRB's location and capture optical images of its afterglow. Due to the combination of ADAPT's rapid computing pipeline, the location of AIRIS on the same platform as ADAPT, and AIRIS' rapidly slewing mount, AIRIS is quickly able to observe the optical afterglows of GRBs. Furthermore, AIRIS' near-space vantage point, low-noise SONY CMOS sensor that produces clear, high-quality images, and large aperture 200mm f/1.8 lens, enables the observation of very faint signals. Through burst localization and time evolution tracking, AIRIS enables observations essential for studying GRBs' development. The data AIRIS gathers will feed into NASA's General Coordinates Network, guiding telescopes worldwide to observe GRB afterglows and contributing to multi-messenger astronomy.

Gamma-ray bursts (GRBs) are immensely energetic events in our universe, emitting intense gamma radiation. They are characterized into two types: short-duration GRBs, lasting less than two seconds; and long-duration GRBs, which can last from several seconds to a few minutes. Short-duration GRBs are thought to be the result of the merger of two neutron stars; long-duration GRBs are possibly associated with the collapse of massive stars into black holes. However, the true origin of GRBs remains uncertain [1]. Following the initial gamma-ray emission of a GRB, an afterglow is observed across the entire electromagnetic spectrum, including X-ray, ultraviolet, optical, infrared, and radio. The afterglow is a result of the interaction between the ejected material and the surrounding interstellar medium, which produces a shockwave that emits radiation. Studying GRB afterglows provides valuable insights into the characteristics of the burst, such as its energy, the environment surrounding the explosion, and the possible causes of these events [2].

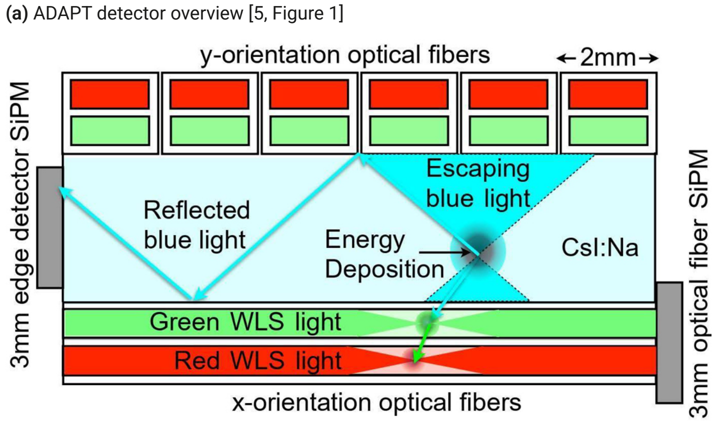
Scientists use multi-messenger astronomy to analyze transient events like GRBs. Multi-messenger astronomy is an approach that combines many observations from the same astronomical event. Astronomical events can have a variety of phenomena produced, each with categorically different kinds of "signals." For instance, a single astronomical event can produce light in wavelengths from radio to gamma rays, neutrinos, and gravitational waves. Each of these messengers requires an observational system dedicated to the detection of particular messengers, such as LIGO (Laser Interferometer Gravitational-Wave Observatory) for gravitational waves or VLA (Karl G. Jansky Very Large Array) for radio waves. GRBs are thought to produce light in all wavelengths from gamma to radio, typically in afterglow emission. By integrating data from diverse sources, scientists can study complex events, like GRBs, in greater detail.

ROTSE (Robotic Optical Transient Search Experiment) was designed to detect optical counterparts of GRBs in real-time. It gained prominence by capturing the first real-time optical afterglow of a GRB (GRB990123). The first system, ROTSE-I, consisted of a ground-based four-camera array using Canon 200mm f/1.8 lenses - the same lens used for AIRIS (ADAPT Incidence Resolution & Imaging Subsystem). Later, ROTSE-III systems were deployed globally with improved optics. Working with gamma-ray burst detection instruments such as Swift, ROTSE was able to react to hundreds of GCN (General Coordinates Network) notices and contribute key findings to astronomical research, helping to prove GRBs are of extragalactic origin [3].

ADAPT (Antarctic Demonstrator for the Advanced Particle-astrophysics Telescope) is a multi-university NASA mission, led by Professor James Buckley of the Washington University Department of Physics, which plans to fly on a balloon over Antarctica in December 2026 to demonstrate technologies for the proposed future APT (Advanced Particle-astrophysics Telescope). Its detector is built from four layers of CsI:Na scintillating tiles with wavelength-shifting fibers in the x- and y-directions, which are read out by SiPMs (Silicon PhotoMultipliers) on a nanosecond time scale, as seen in Fig 1. The signals are amplified by ASICs (Application-Specific Integrated Circuits) and fed a set of FPGAs (Field-Programmable Gate Arrays), which preprocess the data, turning streams of detection counts into an "event" containing a set of information associated with a single gamma ray photon. This information is fed into a CPU (Central Processing Unit), which produces a maximum likelihood vector and a likelihood map. The vector will be calculated within 300ms of the burst occurring, with the full map estimated to take 1-2 seconds. This represents a major step forward from previous missions such as Fermi, which took 20 seconds to localize a GRB burst and transmit the signal to the ground. [4] However, due to the relatively small detector size and the location in the upper atmosphere, the 95% error box will be fairly large, ranging from 16° to 2°, for bursts of 0.5 and 4 MeV/cm2, respectively. These localizations will be fed into the NASA General Coordinates Network (GCN), which distributes them to ground-based telescopes for afterglow imaging, presenting an opportunity to study the afterglows at an unprecedented low latency [5].



(a) ADAPT detector overview [5, Figure 1]



(b) Cross-section of ADAPT detector tile [6, Figure 4]

Fig. 1 | The ADAPT instrument sensor

WashU Satellite, an undergraduate-led design team building space missions to solve research questions, has been working closely with the physics department to contribute AIRIS to the ADAPT mission. Founded a year ago, it has grown to a forty-five-person team including students from every undergraduate school at the university, as well as Masters and PhD students. The group is assembling and tuning a large 70 cm radio ground station to communicate with satellites; has two satellites in the proposal stage; and is spearheading the design, build, and testing of the AIRIS project.

Scientific and Engineering Goals of AIRIS

AIRIS is a fast-slewing optical telescope mounted on the same platform as ADAPT. AIRIS is designed to refine GRB localization sent by ADAPT and provide optical images of their afterglows. Consequently, AIRIS has several scientific goals.

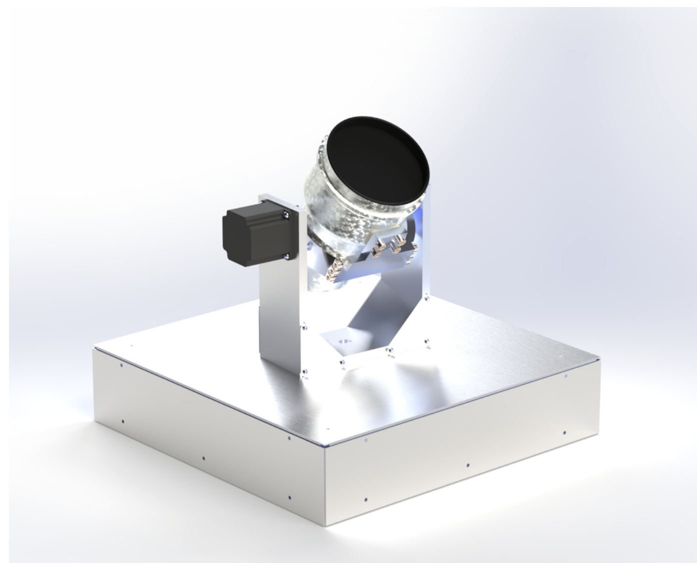


Fig. 2 | AIRIS preliminary structure CAD

Rapid GRB Afterglow Imaging

AIRIS aims to capture the optical afterglow of GRBs within 30 seconds, enabling early-time imaging that can reveal details about the GRB's energy, environment, and evolution. AIRIS can help fill observational gaps in the early phases of GRB afterglows.

Localization Refinement

AIRIS aims to improve the positional accuracy of the GRB detected by ADAPT. By comparing real-time sky images to its own star map, AIRIS can improve the positional accuracy of GRB events. AIRIS will then upload that location to NASA's General Coordinates Network to support multi-wavelength follow-ups by other telescopes.

Observation of Other Transients

While AIRIS is designed to imagine GRB afterglows, it is capable of observing other astronomical objects of interest, like active galactic nuclei (AGNs) or fast radio bursts (FRBs) visible in the southern hemisphere (i.e. blazar PKS 2155-304).

In addition to the astrophysics mission, AIRIS will demonstrate optimal search and control strategies vital to multi-messenger astronomy, in collaboration with postdoctoral fellow Marion

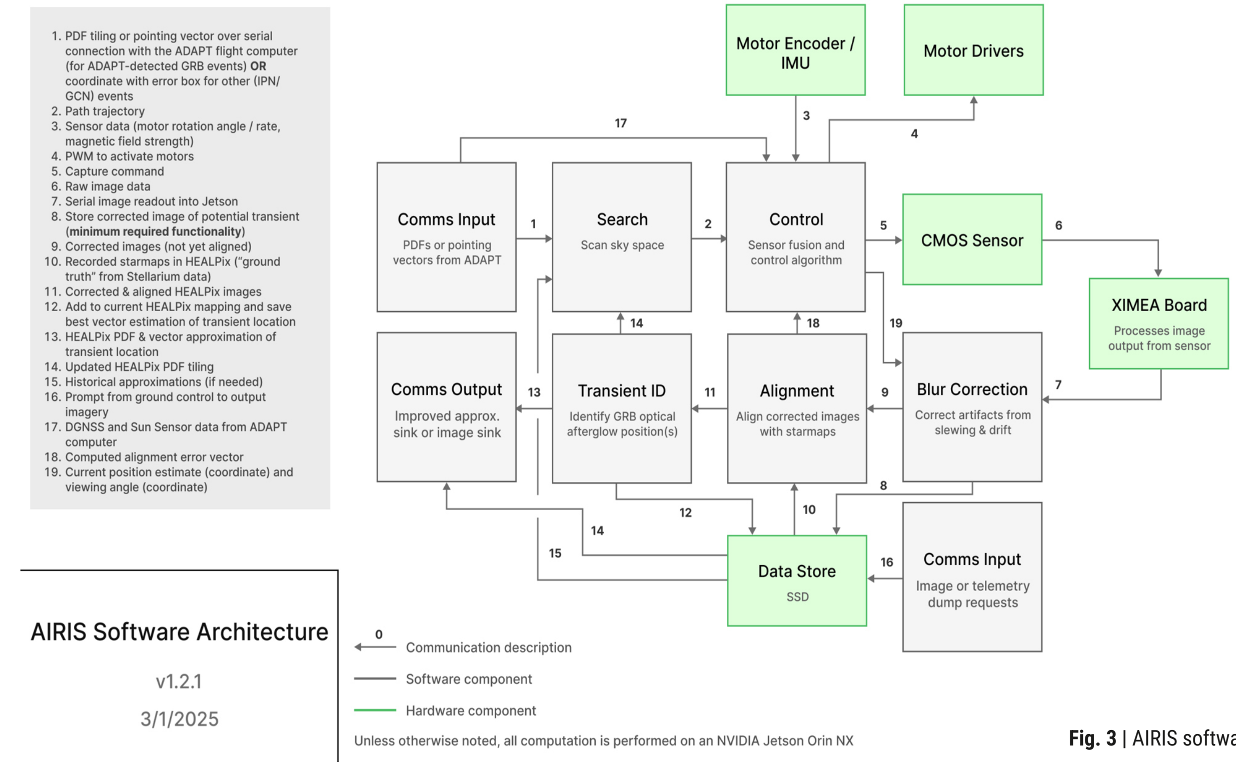


Fig. 3 | AIRIS software architecture

Sudvarg and Professor Andrew Clark of Electrical and Systems Engineering. For optimal performance, a search algorithm must plot a path to search through the probability density function given the expected event magnitude, imaging performance (noise, sensitivity, field-of-view, and resolution), and control system performance. This is a highly probabilistic problem that, if solved for a general case, could improve the performance of multi-messenger follow-on instruments. AIRIS will provide a real-world testing platform for these strategies.

Imaging

The AIRIS imaging system is designed around a Canon 200mm f/1.8 lens graciously donated by Professor Buckley, which has excellent light gathering and low aberration, and has heritage from the first observation of GRB afterglow in the ROTSE experiment. [3] A band-pass filter is used to block imaging wavelengths outside of 645-675 nm. The high frequency cut blocks out blue/green colors, which are still bright in the arctic atmosphere and would reduce the image contrast. The low frequency cut blocks out near-IR and IR wavelengths, which do not focus properly through the lens and blur the images. The SONY IMX455 monochromatic CMOS sensor was selected for its high quantum efficiency, space heritage, large size, and single electron read noise, which is key to stacking many short-exposure images.

We aim to characterize GRBs occurring at magnitudes 12-20. Astronomical magnitude is a logarithmic scale where higher magnitudes signify lower luminosities and a difference of five in magnitude equates to a scale of 100x in luminosity. While GRBs are some of the most energetic events in the universe, they occur in extremely distant galaxies ($z \sim 0.008$ - 9.06 [7], corresponding to distances of 100 million - 20 billion light years). The extreme distances of these events cause GRB afterglows to have large redshift and low brightness, resulting in their high magnitude.

To calculate the limiting magnitude (the highest magnitude events detectable with our optical system), we rely on physically accurate Python simulations, to be confirmed with empirical measurements made with the sensor and lens at a later date. Simulating CMOS sensor data involves generating a star map with a random distribution of magnitudes and locations, gaussian point-spread functions, Poisson photon shot noise, and readout and thermal noise. Additionally, the script offers support for 3x3 pixel binning, moving exposures, cosmic ray sims, background sky signals from Rayleigh scattering, and SNR (Signal-to-Noise Ratio) calculations. An SNR of 2-3 is considered minimal for detection, and current simulations support SNR > 3 for signals of magnitudes > 15 at or above 10 seconds of exposure.

Images will be streamed from the CMOS sensor, through a carrier board, and into an NVIDIA Jetson GPU, which will execute the image processing. Each image will be taken with a short exposure to allow for rapid traversal of the sky space, and, once passed to the Jetson, will have motion blur removed and its alignment calculated relative to a stored star map. Star maps and accumulated imagery of the current observation period will be formatted with HEALPix, an equal-area spherical coordinate transform commonly used for similar imaging applications. The updated map will be compared to the stored star map and the ADAPT PDF (Probability Density Function) at each capture stage, searching for the optical GRB afterglow. Once a highly likely transient is identified, AIRIS will continue to observe the afterglow and send an alert to the General Coordinates Network for further observation.

Control

AIRIS will operate under a structured Concept of Operations (CONOPS), supporting multiple operational modes to optimize transient detection and follow-up observations. These modes will include idling, communication, fixed-target observation, observing a fixed target, and transient searching. The fixed-target mode will be primarily used for observing sources identified by ADAPT and other General Coordinates Network (GCN) notifications with small error boxes, ensuring rapid and precise follow-up of transients. Transient search mode will be used for real-time scanning of PDFs of potential locations. This mode will also serve as a testbed for detection algorithms. The choice between these modes will be adjusted based on mission priorities, with transient search serving as the default reaction to ADAPT alerts when no fixed targets are specified.

To ensure pointing and tracking performance, AIRIS will implement a path planning framework that governs slewing, stabilization, and targeting. The control system will optimize for three parameters: (1) slew rate, the rate at which AIRIS can reorient itself to capture afterglows within the required response time (30 seconds or less); (2) settle time, the time required for AIRIS to stabilize after slewing, minimizing jitter; and (3) pointing knowledge and accuracy, the ability to maintain sub-arcsecond precision in localization, allowing for refined position of bursts.

AIRIS will use a combination of positioning sensors for attitude determination and control. Coarse pointing determination sensors include, (1) two internal measurement units (IMUs) to provide data to support attitude control and stabilization; (2) two magnetometers to measure Earth's magnetic field for attitude determination; and (3) motor encoders to provide feedback on actuator positions. Fine pointing knowledge will be determined from the alignment data of the image processing pipeline. Furthermore, the ADAPT gondola is equipped with a sun spotter and a Differential Global Navigation Satellite System (DGNSS) that AIRIS can access to gain information for the platform's location and orientation.

AIRIS will use vacuum-rated stepper motors for telescope pointing and reaction wheels for counter-torque mechanisms, ensuring rapid and accurate pointing while minimizing disturbance to the ADAPT platform. The AIRIS optical system is designed for azimuth and elevation rotation, allowing full sky coverage. Due to cabling constraints, the lens assembly will not spin continuously but remains capable of covering all necessary orientations. AIRIS is designed to operate without a gearing system, minimizing the complexity and mechanical play in the control system.

Support Systems

The ADAPT platform will provide AIRIS with power, communications, a thermal sink, and mounting points. AIRIS will include a power distribution network to regulate and step down voltage levels for the various mission systems. Communications, including OTA software updates, debug and status information, GCN likelihood updates, and science data downloads will be sent over TCP/IP through the ADAPT Starlink connection when AIRIS gets communication bandwidth.

The AIRIS structure provides mechanical support for the imaging and computational missions by creating a thermally regulated electronics enclosure section for all stationary components and a moving frame for the lens to allow for full sky coverage. Both sections are designed to maintain component functionality in ADAPT's high-altitude near-vacuum conditions, stay within the 20 kg mass limit, and integrate seamlessly with the larger ADAPT gondola structure. Currently, most structural components will be made of 6061 aluminum, a high strength-to-weight ratio alloy with significant spaceflight heritage. Finite element analyses of all structural components are conducted in SolidWorks to ensure proper factors of safety to avoid any mechanical failure under static or slewing conditions. Vibration damping systems are also under consideration to protect AIRIS and its imaging system from disturbances to the ADAPT gondola such as vibrations from ADAPT's fluid cooling pumps.

The thermal management system is responsible for keeping the AIRIS enclosure at the desired temperature range, preventing electronics from freezing in the harsh Antarctic conditions or overheating from their own heat generation. Due to the low density of the air encountered by high-altitude atmospheric balloons, the heat transfer apparatus will make use of conduction as its sole means of exchanging thermal loads. The system was modeled to take advantage of ADAPT's rotation, which keeps one of the gondola's sides permanently facing the sun, allowing the enclosure to be modeled with a hot sun facing side and a cold shaded side. The hot side will use solar radiation and Antarctic albedo as a heat source, while the cold side will be insulated to diminish the thermal gradient inside the enclosure, ensuring that the system does fall below any component's minimum operable temperature. The heat inside the structure will be conducted out by heat pipes that use the ADAPT frame as a heat sink, keeping the assembly within the required range for optimal operation. Flexible heat straps are used on the AIRIS-ADAPT connection to diminish vibration and mechanical stresses on the heat transfer apparatus. High fidelity thermal simulations will be performed to accurately choose the absorptivity of the sun side coating material and properly dimension the heat pipe system.

Risks & Development Plan

AIRIS's most critical risk is the potential to disrupt the primary ADAPT mission. Since AIRIS shares the same balloon platform, power, and communication systems as ADAPT, any malfunction that consumes excess power, uses too much bandwidth, or competes for the platform's limited resources could interfere with ADAPT's primary objectives. To mitigate this risk, ADAPT will have the ability to power down and/or sever the communications link to AIRIS if any anomalous behavior occurs. Furthermore, current limits, bandwidth allocations, and operational protocols will be established to minimize risk and clearly define anomalous behavior. Additionally, an analysis has confirmed that the momentum shift of the rotating telescope will not cause excessive oscillations on the main ADAPT platform.

A second major category of risk involves internal AIRIS malfunctions, including but not limited to thermal failure, mechanical failure, electrical component failure, imaging system failure, and software failure. These risks will be mitigated through rigorous simulation, prototyping, and a test campaign including component- and system-level thermal vacuum testing. Based on previous balloon flights with consumer lenses, key risks to the imaging system include: dust/moisture contamination, the off-gassing and recondensation of materials and coatings onto the lens or camera sensor surface, and the rapid expansion of gas trapped within the lens, leading to catastrophic failure of the optical elements and/or lens housing [8]. To mitigate these risks, the optical system will undergo rigorous vacuum testing, include onboard brushes for dust mitigation, and use carefully selected materials across the payload to minimize off-gassing. Through these strategies, AIRIS aims to maintain its own primary mission while ultimately protecting the primary mission of ADAPT.

Primary AIRIS development timeline began in October 2024 with preliminary design and trade studies, where the team made key architecture decisions and defined module-level requirements. Preliminary design reviews (PDR), where engineers responsible for each component and module present their ideas before having them reviewed by peers and the executive team, occurred in December 2024 and February 2025. After passing the PDR, the team begins prototyping each module. This phase includes developing a fully functional prototype payload, which will undergo component- and system-level performance and environmental testing, followed by a final design review (FDR) in May 2025. After the FDR, an updated prototype will be built and tested, culminating in a full thermal vacuum integration test alongside the ADAPT payload in October 2025. Following this phase, final flight hardware will be manufactured, and software will be implemented for a Flight Readiness Review (FRR) in Spring 2026 in preparation for full integration in Summer 2026. In December 2026, AIRIS will enter the launch and operations phase. Before ascent, it will undergo final checkouts and over-the-air (OTA) software updates, after which it will begin its primary mission. During the flight, telemetry and science data will be downlinked via Starlink, while the engineering team monitors the payload's health based on the data. If necessary, software updates will be transmitted over the air to optimize performance or troubleshoot malfunctions. Localization data will be sent to the NASA GCN. Post-flight, scientific analysis of the experiment data and performance assessment of the payload will be conducted in collaboration with the ADAPT team.

Conclusion

AIRIS presents a unique opportunity to observe GRBs and other high-energy phenomena, while also building knowledge about transient multi-messenger astronomy. AIRIS offers unprecedented rapid optical afterglow observation as a result of its proximity to ADAPT, ADAPT's fast computing pipeline, and its rapidly slewing mount design. The near-space vantage point and high performance sensor and optics on AIRIS enable observation of very faint signals. Much development work remains, including imaging, search, and control algorithms, communications and command software, power and structural support systems, and a detailed test campaign to ensure the system meets performance and longevity requirements in a near-space environment without endangering the primary ADAPT mission. Overcoming these challenges will allow for an exciting collaboration between the WashU Satellite team and the ADAPT mission, led by Professor James Buckley of the WashU Department of Physics.

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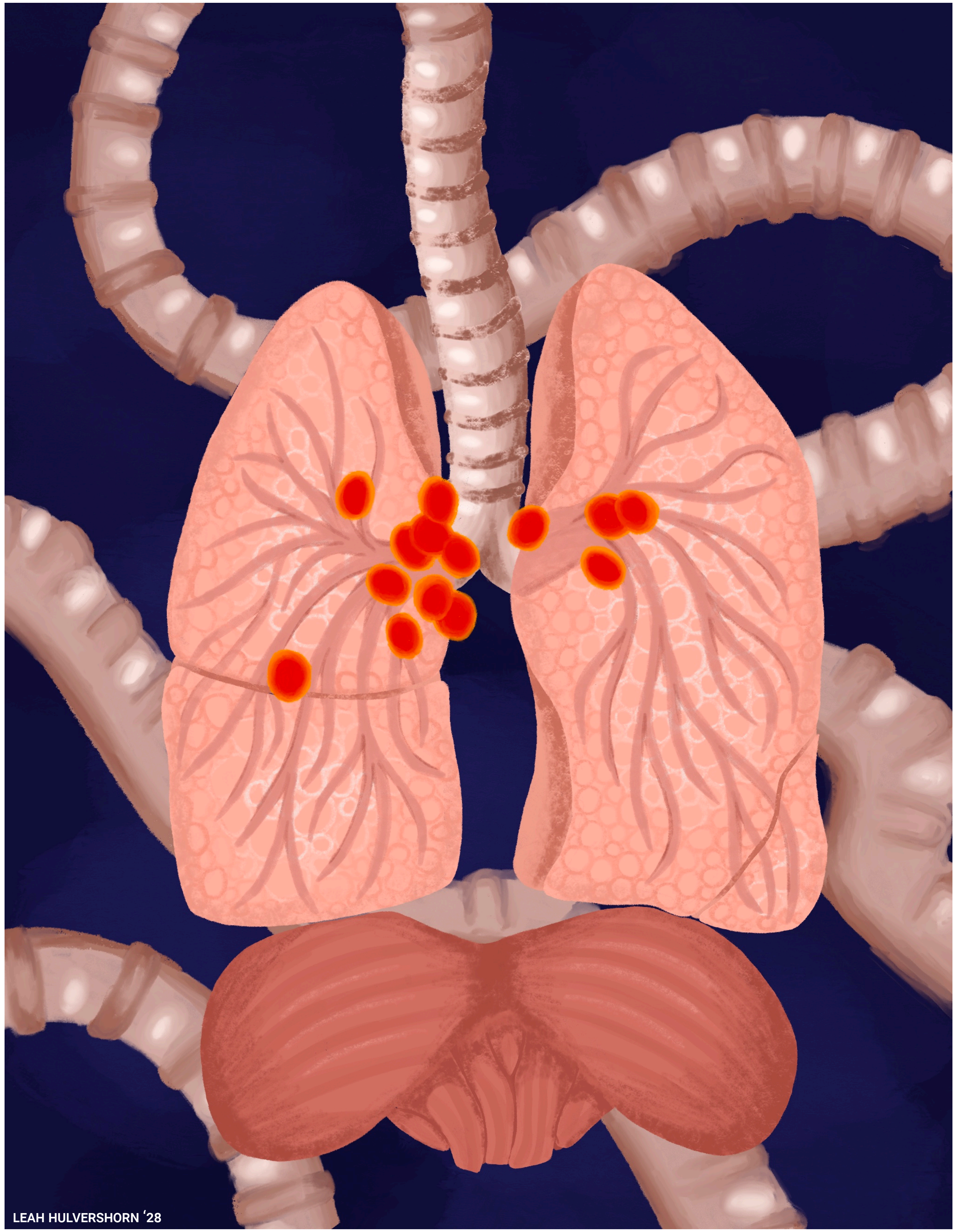

ORIGINAL RESEARCH

Role of S100A8/A9 Proteins in Identifying Tuberculosis Disease States

Sai Prem '26
Washington University in St. Louis

Tuberculosis (TB) is an infectious disease spread person to person via coughing and sneezing tiny, aerosolized droplets containing *Mycobacterium tuberculosis*. The disease has two states: active TB, where individuals suffer from all symptoms and are able to spread the disease, and latent TB, where the bacteria is present in the body, but does not grow, preventing the individual from feeling symptoms or infecting others. S100A8/A9 proteins function to regulate inflammatory processes and immune responses both extracellularly and intracellularly. The objective of this study was to determine if S100A8/A9 proteins can be used as a biomarker to differentiate between the two disease states of TB. Levels of S100A8/A9 proteins were tested in human serum samples with varying states of the disease (Active TB, Latent TB, Healthy Donor) using a sandwich ELISA. We found that S100A8/A9 proteins were highest in samples containing Active TB. Latent TB samples also contained a slightly elevated, but not significant, level of S100A8/A9 proteins compared to healthy donor samples. These data suggest that immune responses to the growth of *Mycobacterium tuberculosis* may lead to increased levels of S100A8/A9 proteins in the body, and that these proteins may be a promising candidate biomarker for rapid and reliable TB detection. Future studies are needed to increase statistical power and investigate other alternatives, like different proteins in the S100 family or human lung samples rather than human serum samples.

Known by many names, the "white death" has trailed humanity since earliest antiquity [1]. Today, approximately 1.7 billion individuals have some form of tuberculosis (TB), the disease caused by aerial transmission of *Mycobacterium tuberculosis* [2]. Upon infection, the disease may develop into either latent TB (LTB) or active TB (ATB) in individuals. Latent TB is a state of tuberculosis in which *M. tuberculosis* is present but dormant, causing infected individuals to be asymptomatic. Individuals with latent TB have a 10% chance of the disease developing into active TB [3], where M. tuberculosis is present and growing in the body, allowing the individual to experience symptoms and also transmit the disease to others.

M. tuberculosis rests among the world's leading causes of death from a single infectious agent. In 2023, tuberculosis infected roughly 10.8 million people worldwide, with an estimated 1.25 million deaths [4]. The disease is curable and preventable, but remarkably resilient, proving very challenging to eliminate fully. After more than a century of use, the BCG vaccine is still the standard of prevention, contributing to a 60-80% decrease in incidence, but with variable efficacy, particularly in adult cases [5]. Current treatments are grueling, including a combination regimen of the antibiotics isoniazid (INH), pyrazinamide (PZA), rifampin (RIF), and ethambutol (EMB) that takes anywhere from 4 to 9 months [6]. And importantly, due to the lack of symptoms within latent TB infected individuals, many are not aware that they have the disease. In fact, more than 80% of people who contract ATB in the United States originally had untreated LTB [3].

TB burden upon patients and healthcare systems is therefore immense, and there is a clear need for superior therapies and diagnostic tools to prevent its continued spread. TB causes inflammation within the body, as *M. tuberculosis* has developed various mechanisms to evade the host immune response, residing primarily in the lungs and surviving even when engulfed by phagocytes. To gain a better understanding of the biology permitting TB's persistence in the body, and to identify novel inflammatory biomarkers reflective of TB burden which could be used in diagnostic settings, we turned to the S100A8/A9 proteins. These Ca/Zn binding cytosolic proteins, part of the S100 family, regulate inflammatory processes and immune responses both intra- and extracellularly [7,8]. Previous lab data (not shown) has implicated these proteins with TB infection and disease. S100A8/A9 proteins have also been found to be a candidate biomarker for many inflammatory diseases, such as islet inflammatory responses, cystic fibrosis, inflammatory arthritis disease, transplantation, and infections [7].

S100A8/A9 proteins have diverse functions and are known to regulate calcium balance, cell apoptosis, cell proliferation, cell differentiation, energy metabolism, and inflammation [7,8]. They are mainly present in activated immune cells of myeloid origin, such as neutrophils, monocytes, and also macrophages [9]. Intracellular S100A8/A9 protein complexes play a role in cytoskeleton modulation, amino acid metabolism, and protection against pathogens. Extracellular S100A8/A9 proteins stimulate leukocyte recruitment and cytokine secretion, among other functions. S100A8 and S100A9 often bind each other, forming the abundant (representing 30-60% of neutrophil total cytosolic protein) heterodimer calprotectin which has pro-inflammatory and anti-microbial properties [10,11]. While these proteins are often involved in inflammatory responses, they also exhibit anti-inflammatory properties under specific conditions, suggesting that these proteins modulate and restrict excessive inflammation [7].

Although previous studies showed that secretion of S100A8/A9 proteins can be driven by infection-induced inflammation [7,8], whether and how S100A8/A9 protein levels are affected by the onset of various disease states in the context of tuberculosis has not been investigated. Thus, we tested the levels of S100A8/A9 proteins in samples of active TB, latent TB, and healthy donor (no TB) through the use of a sandwich ELISA. We present data here suggesting that S100A8/A9 proteins may be used as a biomarker for distinguishing between ATB and healthy sera. More work is needed to clarify the efficacy of S100A8/A9 serum detection in distinguishing between various disease states of TB (ATB vs. LTB).

Materials and Methods

Tuberculosis Samples

Sera from ATB, LTB, and healthy control (uninfected, HC) patients were collected from Instituto Nacional de Enfermedades Respiratorias (INER), Mexico City, Mexico. Diagnosis of patients were found through tuberculin skin testing (TST), interferon gamma release assays (IGRA), and sputum analysis. TSTs are not specific for TB and may have false positive and negative rates, so positive TST tests must be followed by additional IGRA testing specific for TB. This testing cannot confirm that the individual is currently infected with TB, but rather that they have been exposed to it. Latent infections will not expand in culture, so sputum is obtained from TST+/IGRA+ patients and subsequently cultured *in vitro* to determine whether *M. tuberculosis* is growing or not. Active TB patients test positive for all TST/IGRA/sputum tests. Latent TB patients will have positive TST/IGRA tests but negative sputum tests. Healthy donors have negative TST/IGRA/sputum tests.

S100A8/A9 Protein Quantification by ELISA

Plate Preparation. Sandwich Enzyme-Linked Immunosorbent Assays (ELISAs) (R&D Systems Human S100A8/S100A9 Heterodimer DuoSet Elisa) were performed on 3 conditions to quantify S100A8/A9 protein levels: healthy serum (negative control), ATB, and LTB. Assay standards and samples were generally prepared as detailed in the provided R&D ELISA protocol. Reagent diluent was created using 50 mM Tris, 10 mM $CaCl_2$, 0.15 M NaCl, and 0.05% Brij35. HCl was also added to the solution to adjust the pH to 7.42-7.44. Then, anti-S100A8/A9 capture antibody was diluted with 1x PBS to a final concentration of 120 µg/mL. 100 µl of diluted capture antibody was dispensed to each well in the 96-well plate. Border wells can be avoided in order to prevent evaporation/heat distribution changes. The samples were sealed and left at room temperature (20-22°C) overnight. The next morning, wash buffer and block buffer were created with 0.05% Tween 20 in PBS and filtered 1% BSA in PBS, respectively. Samples were washed with wash buffer for a total of 3 washes at 200 µl/well and blotted on paper towels. 100 µl of Block Buffer was added to each well and was left to incubate at room temperature for 1 hour. Serial dilution was then performed on the standards, and the final concentration of dilution was 93.75 µg/mL. Samples were washed with wash buffer and blotted on paper.

Assay Procedure. 100 µl of standards and samples were added to all wells and allowed to incubate at 4°C overnight. The following day, monoclonal 27E10 detection antibody was diluted to a final concentration of 60 ng/mL, added to wells, and incubated for 2 hours. Samples were washed with wash buffer, added by 100 µL/well, and washed 3 more times with 200 µL wash buffer/well. Strep-HRP solution was then created at a working concentration of 1:40 dilution of reagent diluent and 7.5 mL solvent. This solution was then added at 100 µL/well and allowed to incubate in the dark at room temperature for 20 minutes. Samples were washed using wash buffer and blotted on a paper towel in the dark. Then, substrate solution was created using a 1:1 mixture of Color Reagent A (H_2O_2) and Color Reagent B (tetramethylbenzidine). 100 µL of substrate solution were added to each well while simultaneously tapping on the plate in order to ensure thorough mixing. After 20 minutes of incubation in the dark, 1 M H_2SO_4 stop solution was added. Finally, the plate was read at 450 nm to quantify S100A8/A9 protein levels.

Statistical Analysis of Data

The use of a Shapiro-Wilk test of normality was employed to determine whether a non-parametric test should be used or not. All samples were ranked from least concentration to highest concentration. The resulting p-value was found to be statistically significant. Thus, the results of this test showed that the data does not follow a normal distribution, and therefore, a non-parametric test should be used. The Kruskal-Wallis test was then run on the data set. All samples were given a rank from lowest to highest. Then, the sum of these ranks was added, and an H value was calculated. Finally, a p-value was calculated using a Kruskal-Wallis p-value chart. This test showed a p-value of <0.0001, meaning the null hypothesis is rejected and at least one of the sample groups stochastically dominates another. The Dwass, Steel, Critchlow-Fligner (DSCF) method was subsequently used to check for pairwise 2-sided multiple comparison analysis.

Results

Elevated S100A8/A9 Proteins Are Found in Samples With Active Tuberculosis (ATB)

S100A8/A9 protein levels were found to be higher in ATB samples than LTB and healthy controls. ATB samples had a mean value of 1268 pg/mL, while the LTB sample mean was 345 pg/mL and healthy control mean was 196 pg/mL (Figure 1).

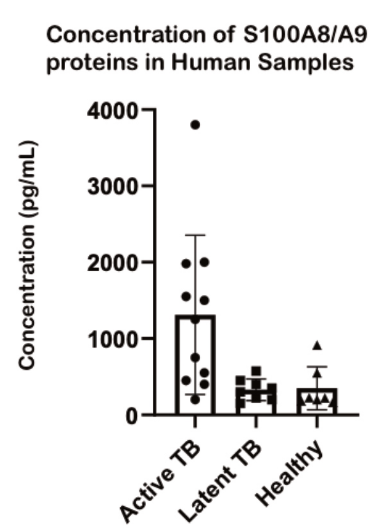

Fig. 1 | Concentration of S100A8/A9 heterodimers in human serum samples with active TB, latent TB, and no TB (healthy). Active TB is presented in the first bar with 11 samples, while the latent TB and healthy donor bars contain 10 samples each.

The p-value across the three groups by Kruskal-Wallis was <0.0001. In the following post hoc DSCF pairwise comparisons, the following p-values were reported: ATB vs. LTB: <0.0001; ATB vs. HC: <0.0001; LTB vs. HC: 0.1376. ATB vs. LTB and ATB vs. HC values are considered significant against a standard p-value of significance, 0.05. This suggests that S100A8/A9 is increased by a significant amount in the sera of ATB patients when compared to the sera of either LTB or healthy control. However, the data do not demonstrate that S100A8/A9 serves as an effective biomarker in differentiating and identifying LTB patients from otherwise healthy individuals (HC).

Discussion

Leukocytes such as neutrophils, macrophages, and monocytes play a critical role in the body's immune response and contain the majority of S100A8/A9 proteins in the body. In the presence of persistent *Mycobacterium tuberculosis*, we hypothesized that a sustained level of inflammation mediated by these leukocytes could be detected through upregulated serum S100A8/A9. To investigate if S100A8/A9 proteins could serve as a biomarker for distinguishing between active and latent TB states, we employed a sandwich ELISA, selected for its high sensitivity and specificity in identifying our desired proteins. We predicted that active TB samples would contain higher levels of S100A8/A9 proteins compared to latent TB samples and that latent TB samples would contain higher levels of S100A8/A9 proteins compared to healthy donor samples. Here, we provide evidence suggesting that S100A8/A9 proteins are effective markers in distinguishing between ATB and healthy (no TB) individuals. However, we did not demonstrate that S100A8/A9 is significantly upregulated in LTB vs. healthy individuals.

The function of S100A8/A9 proteins is well characterized. Previous studies have reported that S100A8/A9 proteins are elevated in patients with systemic inflammatory response syndrome and other inflammatory diseases, and could thus serve as a representative marker to diagnose or detect the progress of these diseases. In a similar manner, *M. tuberculosis* causes symptoms in individuals that in turn activate immune responses. As speculated, our data demonstrate that S100A8/A9's presence in serum is indeed positively associated with TB burden. We therefore suggest that S100A8/A9 proteins may play a plausible and valuable role in the detection and diagnosis of tuberculosis.

This work was limited by a lack of statistical power and small sample sizes. Future work is needed to validate these claims and clarify the difference between S100A8/A9 levels in LTB vs. healthy individuals. This will allow us to conclude whether S100A8/A9 can serve as a reliable indicator of a patient's current disease status (i.e. ATB vs. LTB vs. healthy). Future directions may also look into testing other proteins within the S100 family, which also play valuable roles in regulating immune responses and inflammatory processes. Finally, future projects may look into human lung samples instead of serum and use fluorescence testing or other immunologic techniques.

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General Assay Protocol

"Human S100A8/S100A9 Heterodimer DuoSet Elisa." www.rndsystems.com, https://www.rndsystems.com/products/human-s100a8-s100a9-heterodimer-duoset-elisa_dy8226-05#assay-procedure.

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ORIGINAL RESEARCH

Decoding FDI Inequality: The Bureaucratic Factor in India

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Following the economic liberalization led by Shri Manmohan Singh in 1991, India saw a surge in Foreign Direct Investment (FDI), yet its distribution remains highly uneven, with 85% of the $70.9 billion received in 2023 concentrated in just five states. While previous studies emphasize factors like GDP, infrastructure, and human capital, they fail to fully explain this disparity. This study highlights bureaucratic inefficiency as a key determinant, using cross-sectional data from 2022 and multiple regression analysis. The results show a statistically significant positive relationship between FDI and corruption cases per 10 lakh individuals (coefficient: 2439.607, $p < 0.1$), suggesting that corruption enables investment by helping firms bypass bureaucratic red tape. Additionally, infrastructure and inflation negatively impact FDI, while GDP has a strong positive correlation (coefficient: 0.029, $p < 0.01$). With an R^2 value of 0.81, the model explains a substantial portion of FDI variation across states. These findings challenge the conventional assumption that corruption deters investment, instead showing its paradoxical role in facilitating FDI in regions with inefficient governance. However, reliance on corruption for economic activity has long-term consequences, reinforcing inefficiencies and limiting equitable development. To attract sustainable investment, policymakers must prioritize governance reforms, streamline approval processes, and strengthen institutional transparency, ensuring FDI flows are driven by economic fundamentals rather than informal practices.

Foreign Direct Investment (FDI), cross-border investment in businesses, is an essential part of a country's capital account. It allows a country to maintain its foreign reserves and increase its investment component, which can lead to long-term economic growth by increasing the investment in the economy. Many major developing countries have seen escalating growth in net FDI inflow, which has helped them transition from agricultural to industrial economies. Similar is the case for India, an economy with a net FDI inflow of $70.9 billion as of 2023, a significant increase from the pre-liberalization period. About 67% of the total post independence FDI inflow in India has happened in the last 23 years. However, the inflow of FDI has yet to be even across India, with some states like Maharashtra, Karnataka, Gujarat, Delhi, and Tamil Nadu receiving almost 87% of their total FDI for the current year[1]. The concentration of FDI in a few states raises concerns, as it may exacerbate regional disparities despite its importance to economic development across all states.

What makes FDI so important? FDI increases the marginal productivity of capital in local firms, as highlighted by Wang & Blomström [26]. Local firms' productivity is improved when they learn from observing the superior technology and expertise of foreign multinational corporations (MNCs). The regional firms get an opportunity to catch up with the foreign firms as research and development flows across the firms. Foreign firms choose to invest in other countries rather than their own country to utilize the resources of different countries, such as human capital, land, etc., which also allows them to increase productivity in their own country at a lower cost–indicating that there is almost a symbiotic relationship between FDI and economic growth for both countries, which is further shown in the empirical analysis of 23 developing countries and China by Hsiao and Shen [14].

The more crucial question is, what drives the inflow of FDI? Foreign Direct Investment is positively correlated to employee training in courses, leading to the development of human capital and cooperative tax benefits for the host country. Loungani and Razin [16] argue that in East Asian countries, FDI remained a stable form of investment during the global financial crisis of 1997-98 and was directly linked to human capital growth, as the country's population got employee training in the course of managing the MNC's operation. While it was believed FDI inflow was driven by cheaper labor costs, Amirahmadi and Wu [3] observed that international firms have moved from labor-intensive to capital-intensive manufacturing due to technological advancement in recent years. International firms' workflow has also incorporated technologies like Artificial Intelligence, Machine Learning, and Robotics. Therefore, countries with cheap labor might be less attractive to MNCs, and they would prefer countries with highly skilled labor forces that can adapt to new technologies. Multiple researchers have studied the relationship between FDI and human capital formation but have yet to come to the same conclusion. Miningou and Tapsoba [17] introduced another factor to consider: the external efficiency of an education system. The paper argued that a country's ability to translate skills learned in schools to the labor market is directly linked to the FDI it receives. Therefore, we can say that investment in tertiary and vocational education, which can improve graduates' employability, might be a more effective strategy to attract FDI.

Several other macroeconomic factors drive FDI, such as exchange rate, urbanization, and GDP. Alharthi et al. [2], in their study on GCC countries, concluded that unemployment, population, inflation, GDP growth, infrastructure, and urbanization positively affect FDI inflow to the government. In contrast, CO_2 emissions negatively impact FDI inflow in the long run.

Vijayakumar et al. [25] employed panel data analysis in the context of the BRICS economies, concluding similar findings–i.e., that market potential, infrastructure, capital formation, and industry positively correlated to FDI. While previous studies have identified urbanization as a significant factor in attracting inward FDI, Dutta et al. [12] have contested the positive correlation between FDI and urbanization–analysing data from 107 countries. They concluded that there is a negative correlation between FDI and urbanization. Urbanization, often associated with increased developed physical infrastructure, attracts firms from developing countries but also represents an increase in competition, which is unfavorable for MNCs.

In the Indian context, Chakraborty and Nunnenkamp [8] conducted a sectoral analysis and found that FDI has a mutually reinforcing relationship with output in the secondary sector. There was no significant impact of FDI on growth in the primary industry and only a temporary positive effect in the tertiary sector. FDI in services can lead to long-term growth in the secondary industry through knowledge and technology spillover effects. The study above mentions the need for an even distribution of FDI across the states of India. Sandhya et al. [22] highlight the growing need for FDI in R&D in India, as it has accelerated growth in sectors such as information technology, biotechnology, and automation. However, since the intellectual property rights of innovations in these sectors remain with the multinational corporations (MNCs), the economic benefits are largely reaped by foreign countries, leaving India unable to fully capitalize on these R&D investments.

Regarding the determinants, Dua and Garg [11] analyzed India's data to establish a link between macroeconomic factors and FDI. The study found a positive correlation between FDI, GDP, macroeconomic stability, and infrastructure development. Conversely, a negative association was identified with the exchange rates. According to the authors, tariff barriers were insignificant due to the "tariff jumping" nature of FDI in India, i.e., manufacturing companies use FDI to enter the market instead of directly exporting their goods to avoid tariffs. In a similar light, Subramanian et al. [24] analyzed data from 563 districts of India and concluded a positive relationship between physical infrastructure and FDI inflows. The relationship was essentially non-linear with a "threshold level" of infrastructure, i.e. the infrastructure only became highly significant when a threshold level of infrastructure was met. Similar results were found by Chakraborty et al. [9], which stated that coastal infrastructure (nearness to ports), per capita income and urbanization positively impacted FDI, though the highway density negatively affected the amount of FDI.

Kar [15] highlights that the relationship between India's human capital and FDI shows that investment in primary education does not lead to short-term growth in FDI as it crowds out the investment required for infrastructure. However, FDI inflow does stimulate India's human capital development and increase enrollment in MPhil/PhD programs, presenting a case of reverse causality. Similarly, Gupta [13] argues that India's FDI inflow and human capital are unrelated. Strat [23] suggested a positive relationship between tertiary school enrollment and FDI in Romania and Poland. Similarly, Bengaluru, one of India's IT hubs, receives a high amount of FDI because of its highly skilled labor.

One could claim that the primary determinants of FDI provide an incomplete picture of the variation in FDI across Indian states. For example, regarding human capital, Uttar Pradesh has more educational institutions than Maharashtra, but Maharashtra receives more FDI than Uttar Pradesh. That being said, there are a few things familiar to the states that receive a significant amount of FDI: a greater number of graduates, good physical and digital infrastructure, and good healthcare infrastructure. Thus, some major determinants must be omitted from the above studies, responsible for such distribution of FDI across Indian states.

The primary aim of my paper is to investigate the overlooked determinant—bureaucratic inefficiency—and to analyze how it affects the distribution of FDI across Indian states. I show that including bureaucratic inefficiency provides a more complete picture explaining the variation in FDI across Indian states. The results also inform the much-needed reform to attract more significant FDI in the lagged states. Section 2 discusses how the most studied determinants fail to explain the distribution of FDI across Indian states and how the inclusion of corruption as a primary determinant completes the picture of the variation of FDI across the states. Section 3 highlights the data used in the paper. Section 4 gives the empirical specification and econometric analysis of the collected cross-sectional data from 2022. Lastly, I conclude the paper in section 5.

2. FDI in India: Historical Trends, Regional Variations, and the Role of Bureaucracy

2.1 Relationship Between FDI and Bureaucracy in India

India practiced the "license raj" policy, i.e. businesses needed a number of approvals to operate, over its business from her independence till 1991; therefore, corruption became a part of business expenditure as businessmen preferred to get their licenses by bribing the bureaucrats. According to Ghose and Bhattacharya [7], when foreign multinational companies invest in India, they need a series of clearances from the Reserve National Bank of India. Therefore, many of these companies decided not to follow the rules and bribed the low-paid officials. The money they paid in bribes was generally low; consequently, it became an attractive way for them to enter the country.

Over time, corruption has become ingrained in India, persisting even after the end of the "license raj" in 1991, particularly in the secondary sector. Misallocation of resources, weak law enforcement, and lack of accountability have created an environment where corruption is normalized. Authors like Debroy and Bhandari [10] believe that MNCs participate in bribery because of the reduced economic freedom, owing to the license raj that still exists in India's service sector. However, in many sectors, FDI has moved to the Automatic route[2]. There are still sectors like healthcare, pharmaceuticals, multi-brand retail trading, and digital media where MNCs need government approval before investing in the Indian Market. Thus, eliminating trade barriers to private industry won't change the perception of corruption much.

Obamuyi and Olayiwola [20] mentioned that corruption has an empirical positive effect on economic growth, as it may help "grease the wheels" of commerce by enabling investors and businesses to sidestep red tape and administrative delays. Conversely, corruption and inefficient bureaucracy have also been a bane of our economy. Bedi and Kharbanda [4] mentioned that it takes 67 days for a company to obtain an electricity connection, 16 days to get clearances and export goods from India, 182 days to deal with construction permits, and 1420 days to enforce contracts. It takes

4 to 8 weeks for a new company to register in India compared to a few days in most developed and developing markets, making it difficult for business to operate with the red tapism slowing down operation. The bureaucratic red-tapism, complex tax procedures, restricting labor laws, and uncertain government policies have restricted FDI inflow in India. Bewtra [5] analyzed country-level FDI and corruption data from India between 2008 and 2020, stating that improved corruption control leads to a more significant FDI inflow. Bhattacharyya and Jha [27] state that corruption perception in India negatively correlate with economic growth. Implementing schemes to reduce corruption, such as the Right to Information (RTI) Act (a 2005 law that gives citizens the right to access information from public authorities), has become the need of the hour.

2.2 How Does FDI Vary Across India's States?

Drawing from the previous work on FDI's determinants in India, I focus mainly on macroeconomic factors like gross domestic product, inflation, and foreign exchange rate, as well as social factors like education, healthcare, government stability, and infrastructure to explain the variation above. Though theoretically, all of these factors play essential roles in the development of an economy, when we look at the empirical data from the states of India, we don't find a strong correlation between these factors and FDI. For instance, inflation is frequently used to measure the economy's stability. A high inflation rate decreases regional real investment return, discouraging the investors from investing. However, a stable inflation rate does not provide a better FDI inflow in the Indian context. In the financial year 2022, the inflation rate for Telangana and Maharashtra was 8.6% and 7.3%, respectively, some of the highest in the country, and yet it received Rs 10889.119 crores and Rs 128292.33 crore in FDI inflow, respectively. In comparison, the state with the lowest inflation rate, Goa (3.6%[3]), received just Rs. 142.3 crores in FDI inflow[4].

Education and healthcare are critical components of human capital, as they enhance productivity, improve quality of life, and support long-term economic growth. A frequently cited factor influencing foreign direct investment (FDI) in India is the country's human capital—its large, skilled, and increasingly educated workforce—which serves as a key attraction for foreign investors. However, education doesn't seem to be a determining factor in explaining the regional variation of FDI between Indian states. Though it has previously been mentioned in Miningou and Tapsoba [17] that enrollment in tertiary education is directly related to FDI, especially in Indian states, Uttar Pardesh has the highest student enrollment in universities in 2019-2020[5]. It still received Rs. 5758.17 crore, way lower than Maharashtra (Rs 128292.33 crore). Similarly, for healthcare, Karnataka surpasses all other states in terms of the number of urban hospitals (21,761), which serves as a substantial measure of healthcare infrastructure since most healthcare facilities and FDI are concentrated in urban centers. However, Karnataka still receives less FDI than Maharashtra, which has 149 urban hospitals. Looking at the health index released by the Home Ministry in their Good Governance Index 2021, Kerala has the best health system compared to all states. Still, it received one-third of the FDI inflow Gujarat received in 2022. Therefore, the amount of FDI received by Indian states does not seem strongly related to human capital.

Lastly, infrastructure creates the environment investors need to run their business efficiently. A well-planned infrastructure reduces transportation costs and time, gives enterprises the ideal workplace space, provides the necessary energy required, and creates a perfect environment for research. Still, the variation in the Indian state's infrastructure does not explain the variation across the inflow of FDI in Indian states. According to the Infrastructure Index published by NITI Aayog in 2021, states such as Gujarat, Tamil Nadu, Punjab, Goa, Delhi, and Haryana exhibit higher infrastructure scores compared to Maharashtra. However, Maharashtra continues to attract higher levels of foreign direct investment (FDI), suggesting that FDI inflows may not be directly correlated with infrastructure development.

Given the above evidence, it wouldn't be wrong to claim that an important factor has been missing from the studies undertaken to explain the variation in FDI across Indian States. That variable is corruption, something foreign companies often indulge in to enter the Indian market. Therefore, the coming paragraphs will discuss how corruption explains the distribution of FDI across Indian states when taken in addition to the previously mentioned determinants.

2.3 Contemporary Relationship Between FDI, Bureaucracy and Other Determinants in India

Corruption can be defined in many ways, though it could be broadly defined as when a public official works for private gains. Though corruption might speed up the process in some cases, it often leads to delays in public service and deadweight loss for the economy because of the misallocation of resources. The relationship between foreign direct investment (FDI) and bureaucratic efficiency is complex and multifaceted, often characterized by interdependent dynamics that influence economic outcomes in various ways. As previously discussed, the likelihood of being implicated in a corruption case and facing legal consequences in India remains relatively low. Consequently, many multinational corporations resort to corrupt practices as a means of expediting and facilitating their entry into the Indian market. Maharashtra, the state that experienced the maximum amount of corruption in India in the year 2022[6], also received the maximum amount of FDI. Figure 1 shows the relationship between the FDI inflow of Indian states and the number of corruption cases they receive per 10,000 people.

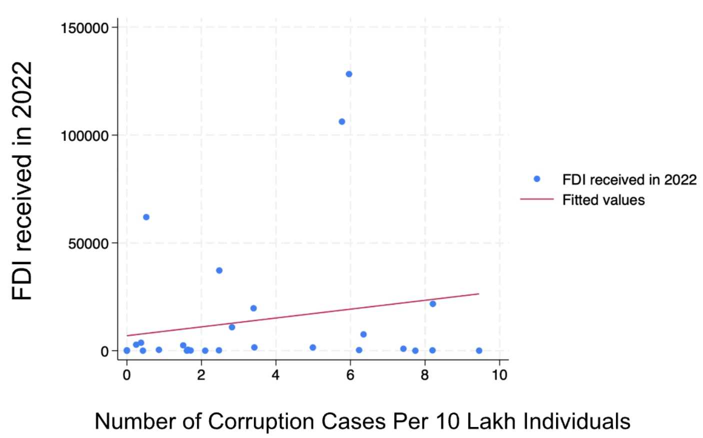

Fig. 1 | Correlation between Corruption and FDI across Indian States

The graph shows a positive correlation between FDI received by a state and the corruption cases it receives per capita. Abosti [1] analyzed the data of the 20 most corrupt countries according to the Corruption Perception Index[7] and argued that corruption is inevitable in developing countries. The paper argued that corruption acts as a helping hand regarding FDI and economic growth in the top 20 most corrupt countries. However, it acts as a "grabbing hand" for the bottom 20 most corrupt countries. The analysis of 33 randomly selected Asian countries yielded a significant positive linear relationship between the Corruption Perception Index and FDI. As a result, the argument that in India, with its weak bureaucratic and judicial systems, MNCs often indulge in corrupt practices to bypass certain restrictions and monetize on the market is strengthened. That could potentially be true in India. So, the following section will analyze the cross-sectional data from the year 2022 to verify the claim.

3. Data

To analyze the impact of corruption on FDI inflow in India, I constructed a cross-sectional data set of different determinants of FDI in each Indian state, FDI received by each Indian state, and corruption cases per 10,000 citizens in each state. The data about corruption cases per 10,000 citizens and the healthcare index have been collected from the NITI Aayog website in their SDG 2024 and SDG 2021-22 calculations, respectively. The infrastructure index has been collected from the Home Ministry's Good Governance Index 2020-21. Inflation, FDI, GDP, and gross enrollment ratio in higher education have been collected from data banks released by the Reserve Bank of India's state-level datasets. The summary of the data collected is given below:

Table 3.1: Summary Statistics

Variable	Observations	Mean	Minimum	Maximum	Std Dev
FDI in Rs Crore	30	13608.3	0.000	128292.3	31337.17
Number of Corruption Cases per ten lakh individuals	30	3.252	0.000	9.450	2.976
Health	30	0.457	0.167	0.721	0.154
Gross Enrollment Ratio in Higher Education	30	31.643	11.2	64.800	13.221
Inflation	30	6.206	3.2	8.6	1.738
Infrastructure	30	50.966	72	24.00	14.072
Number of Riots per 10,000 people	30	2.696	0	7.900	2.333
GDP in Rs Crore	26	1031980	42697.08	3645884	915077.6

Table 3.1 summarizes the data collected. In the case of FDI, the mean is Rs. 13608 crore, and the standard deviation is Rs. 31337.17 crore. The minimum is zero, and the maximum is Rs 13608.3 crore. The explanatory variable of interest, i.e., the number of Corruption Cases per 10 lakh individuals, has an average of 3.252, and the standard deviation is 2.976 – as the minimum is zero and the maximum is 9.45.

The control variable, the Gross Enrollment Ratio in higher education, has a mean of 31.643, with a maximum of 64.8 and a standard deviation of 13.22189. Similarly, inflation in 2022 was a bit higher than the stable level (3%); the average inflation was 6.206667, with a minimum of 3.2, and the data is more uniformly distributed with a standard error of 1.73833. The average infrastructure index across all states is 50.9667, and it is more uniformly distributed with a standard deviation of 14.07243. The number of Riots per 10,000 people is skewed left, with a minimum of 0, a mean of 2.69667, and a standard deviation of 2.3393. The GDP of Indian states in Rs crore is also skewed towards the left, with a mean of 1031980, a minimum of 42697.08, a maximum of 3645884, and a standard deviation of 915077.6. We don't have GDP data for Daman and Diu, Dadar and Nagar Haveli, Ladakh, and Lakshadweep.

4. Empirical Specification and Analysis

For the econometric analysis, a multiple regression model was used to determine the relationship between FDI and Corruption in the cross-sectional data of the year 2022.

$$y_i = \alpha + \beta \text{Corruption}_i + \gamma X_i + \delta_i + \varepsilon_i$$

In the above equation, y_i represents the FDI received by the 'i' Indian state during 2022. The explanatory variable of interest is "Corruption," which represents the number of corruption cases in a state per 10 lakh people. The control variables (X_i) include the Health index, GDP, Infrastructure Index, Inflation, GER in higher education, and Number of Riots per 10,000 individuals represented by the vector X_i. The vector δ_i denotes region-specific fixed effects, divided into North, East, South, West, North East, α is the y-intercept, β is the constant for corruption, γ is the constant concerning controls, and ε_i is the error term.

OLS Results

Table 4.1 presents the regression results assessing the relationship between Foreign Direct Investment (FDI) and the number of corruption cases per 10 lakh individuals, with no controls included in the model. The coefficient for the variable "Number of Corruption Cases per 10 lakh individuals" is 2054.478, with a standard error of 1951.336. Although it suggests a positive relationship between FDI and corruption, it is statistically insignificant. The high standard error indicates substantial variability in the estimate, possibly due to unaccounted factors affecting FDI without control variables.

Table 4.1: Relationship Between FDI and Corruption with No Controls

Variable	Coefficient	Std. Error
Number of Corruption Cases per 10 lakh individuals	2054.478	1951.336
Cons	6926.887	8537.017
Controls	No	No
R squared Value	.0381	.0381
Fixed Effect	No	No

Notes: Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.

The model's R-squared value is 0.0381, meaning that only 3.81% of the variation in FDI is explained by the number of corruption cases alone. No fixed effects were included, indicating that unobserved heterogeneity across observations has not been controlled for, potentially affecting the reliability of these results.

To make the regression more robust, we incorporate control variables, including Health, Infrastructure, the Number of Riots, GDP, the Gross Enrollment Ratio (GER), and Inflation. Table 4.2

presents the regression results analyzing the relationship between foreign direct investment (FDI) and corruption, with these controls included in the model.

Table 4.2: Relationship Between FDI and Corruption (Controls)

Variable	Coefficient	Std. Error
Corruption	2439.607*	1147.379
Health	68566.580*	30414.860
Infrastructure	-639.918*	298.380
Number of Riots	3687.007	1233.080
GDP	0.029***	0.006
GER	-96.179	350.369
Inflation	-1569.196	3134.539
Cons	-22194.180	17852.28
No. of Observations	26	26
R Squared	0.755	0.755
Fixed Effects	No	No

Notes: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The coefficient for Corruption is 2439.607, with a standard error of 1147.379, indicating a positive and statistically significant relationship (the p-value is less than 0.1) with FDI at the 10% level. Therefore, when controlling for factors such as health, infrastructure, and economic indicators, an increase in corruption cases is associated with an increase in FDI, though the significance is marginal.

The model's R-squared value of 0.755 implies that 75.5% of the variation in FDI is explained by this model, indicating a strong fit with the inclusion of control variables. No fixed effects were applied, potentially leaving room for unobserved heterogeneity across observations.

I incorporate control variables and fixed effects in the regression to improve robustness. Table 4.3 presents the analysis results examining the relationship between Foreign Direct Investment (FDI) and corruption, with additional controls and fixed effects included. The vector δ_i denotes region-specific fixed effects, divided into North, East, South, West, and North East, allowing the model to account for unobserved regional heterogeneity.

Table 4.3: Relationship Between FDI and Corruption (Controls and Fixed Effect)

Variable	Coefficient	Std. Error
Corruption	2270.010	1582.997
Health	52350.510	36996.89
Infrastructure	-545.682	364.050
Number of Riots	4820.175*	2205.025
GDP	0.029***	0.008
GER	80.359	515.906
Inflation	-1145.070	5085.224
Cons	-37597.640	35617.410
No. of Observations	26	26
R Squared	0.810	0.810
Controls	Yes	Yes
Fixed Effects	Yes	Yes

Notes: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The coefficient for Corruption is 2270.010 with a standard error of 1582.997, indicating a positive but statistically insignificant relationship with FDI. This suggests that, after accounting for control variables such as health, infrastructure, economic indicators, and region-specific fixed effects, the relationship between corruption and FDI remains positive but lacks statistical significance.

The model's R-squared value is 0.81, meaning that the model explains 81% of the variation in FDI, showing a slightly improved fit with the inclusion of fixed effects. The regional breakdown provides a more robust estimate of the corruption-FDI relationship by controlling for unobserved heterogeneity across different parts of the country.

However, the statistically insignificant relationship may be due to technical limitations rather than the absence of causality. Owing to the small sample size, there is the problem of reduced degrees of freedom–therefore, the model has several independent variables to estimate the effects accurately. However, we encounter significant standard errors and a lower likelihood of finding significance even if it exists.

Alternatively, the fixed effect may have partitioned the overall variation in FDI, leaving little "unexplained variation" to estimate the impact of corruption. If corruption levels are relatively similar across regions—or if the sample size is small—there may be limited cross-sectional variation left. As a result, the model may struggle to detect a statistically significant effect, leading to high standard errors and reduced statistical power.

Despite the above, some positive relationship exists between FDI and Corruption. The result is in line with the statement made by Ghose and Bhattacharya [7] that participating in corrupt activities was a lucrative way for foreign companies to set up their bases in India. It also supports the argument that because of complex tax laws and barriers to entry in the Indian economy, companies will continue to indulge in corrupt activities to speed up the process. Thus, bringing corruption into the picture, variations in FDI across states are better explained as hypothesized in section 2.3.

5. Conclusion

The following study investigates the link between corruption and FDI across Indian states, analyzing cross-sectional data from 2022 using a multiple regression model with fixed effects. The results reveal a statistically significant positive relationship between FDI inflows and corruption cases, with a coefficient of 2439.607, indicating that higher corruption levels are associated with increased FDI. The results align with the case of Maharashtra, which reported the highest FDI inflow in 2022 and had one of the highest corruption levels. As a result, we find that corruption, paradoxically, acts as a "lubricant" for navigating bureaucratic hurdles in India.

However, the study's scope is constrained by data limitations, including only 26 observations and the absence of longitudinal data to track trends over time. Additionally, regional fixed effects and unobserved heterogeneity may obscure other influential factors, such as nuanced state policies. Corruption-related data is also likely underreported due to systemic opacity and difficulty quantifying illicit practices, making the corruption variable we used an under-estimate of the actual corruption in the states. Despite these limitations, the study offers empirical evidence of bureaucratic inefficiency's significant role in shaping FDI distribution, providing

critical insights for policymakers aiming to foster equitable and transparent investment environments across Indian states. A more comprehensive panel data analysis of the Special Economic Zones of India and the corruption cases within them could help us further understand the relationship between FDI and Corruption, solving the issue of high-standard errors and giving us more robust results.

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Additional Sources

Fig. 1 source: FDI received – RBI RBI Overseas Investment Report (2022) and RBI Overseas Investment Report (2021); Number of corruption cases per 10 lakh individuals–NITI Aayog SDG Report 2024

Author Footnotes

[1] Please refer to https://www.investindia.gov.in/foreign-direct-investment for further information.

[2] MNCs do not need government permission before investing in the market.

[3] RBI state level data bank (2022) for further details.

[4] See RBI Overseas Investment Report (2022) and RBI Overseas Investment Report (2021) for further details.

[5] See *All India Survey on Higher Education (AISHE) 2019-20* for further information.

[6] See Crime in India 2022: Volume II, page 779, for further details

[7] The Corruption Perceptions Index is an index that scores and ranks countries by their perceived levels of public sector corruption, as assessed by experts and business executives.

JEL Classification

F21, D73, O53

ORIGINAL RESEARCH

Analytical Explanations of Beauty Pageant Winning Factors

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Founded in 1952, the Miss Universe pageant is the most viewed and impactful beauty contest. We sometimes wonder why contestants from certain countries have consistently performed so well and placed in the semifinals and finals of the competition. Are there winning strategies? In this paper, we analyze the personal and country profiles of the semi-finalists and finalists of the Miss Universe pageants from 2010 to 2021, examining essential factors for winning. Based on the list of beauty pageant semi-finalists and finalists, we augmented their basic data of (1) personal profile, including height, age, education, and language spoken; and (2) country profile, including population, male/female ratio, tourism revenue as a percentage of GDP, GDP per capita, economic freedom index, and geographic regions. We fill in missing data via smoothing or manual calculation and build a forecast model with XGBoost. Then, we used SHAP to visualize and analyze the importance of each factor’s influence on winning and if it is positive or negative.

Our results show that GDP per capita and tourism revenue as a percentage of GDP have a strong negative influence on pageant placement, meaning that countries with lower GDP per capita and lower tourism revenue (as a percentage of GDP) tend to achieve better pageant results. This suggests that contestants from developing countries often perform better in the competition. Regarding personal features, contestant height is a key factor in success, while age, education, and language proficiency have minimal impact – likely due to the homogeneity of these attributes among participants. Overall, this study offers insights into factors influencing pageant success and demonstrates an end-to-end approach to data collection, model selection, and explainable AI-driven analysis.

In 2020, I participated in the Miss Asian Global pageant [4] to gain confidence, improve my public speaking skills, and volunteer for community events. When I was preparing for the pageant, I got to know a few other pageants, the competition format, and the evaluation criteria. The commonly known Big 4 pageants include Miss Universe, Miss World, Miss International, and Miss Earth, each with a different emphasis and purpose. For instance, the Miss Earth pageant focuses on environmental awareness and advocacy, allowing contestants to champion sustainability causes from their home country while promoting environmental initiatives. The Miss Earth pageant then places more emphasis on the contestant’s environmental campaign and intelligence and awareness when scoring. While most pageants generally include segments like interviews, onstage question and answer (Q&A), evening gown, fitness wear, and sometimes talent and cultural attire, each one has nuances in what they value more.

Founded in 1952, the Miss Universe pageant [5] is the most widely-viewed and influential beauty pageant in the world. It celebrates women from diverse cultures and backgrounds while promoting positive change through advocacy and philanthropy.

Observing common trends in Miss Universe, I noticed that the contestants from certain countries have been constantly placing well as semifinalists (i.e., Top 16 or Top 25, varies in different years) and finalists (i.e., Top 5 finishes). I started to wonder, are there any important factors or formulas to winning pageants? In this paper, we analyze the personal and country profiles of the semi-finalists and finalists of the Miss Universe pageants from 2010 to 2021 to find out the critical factors for winning.

The rest of this paper is organized as follows: We first explain our initial research on this subject, review prior work, and describe how we collect valuable data to conduct analysis. Next, we augmented contestants’ fundamental data of (1) personal profile, including height, age, education, and language spoken; and (2) their country profile, including population, male/female ratio, tourism revenue as a percentage of GDP, GDP per capita, economic freedom index, and geographic regions. We then built a forecast model with the XGBoost algorithm, a powerful and efficient Machine Learning algorithm that works well in handling structured data and identifying complex patterns, making it ideal for predicting pageant winning factors drawn from a mix of demographic, economic, social, and personal attributes. Finally, we used SHapley Additive exPlanations (SHAP), a tool for XAI (Explainable AI), to visualize and analyze the importance of each factor and whether or not it has a positive or negative influence on the factors winning the pageant.

The results are interesting, as they show that GDP per capita and tourism revenue (as percentages of GDP) have the strongest negative impact on winning – suggesting that wealthier countries experience less social impact from pageants compared to developing countries, where such events and exposure may have greater cultural or societal significance. Moreover, we found that the height of the contestants is vital for winning, while the contestants' age, education, and mother language are not. Taller contestants are more likely to win compared to others due to the variance in contestants’ heights, but the latter attributes are not as significant because most contestants have at least a bachelor’s degree and speak English well so it is hard to draw insights from the minor differences. Also, the contestants’ ages are within a small range with an average of 23-24 years old, even though the age requirement is 18 to 28 years old.

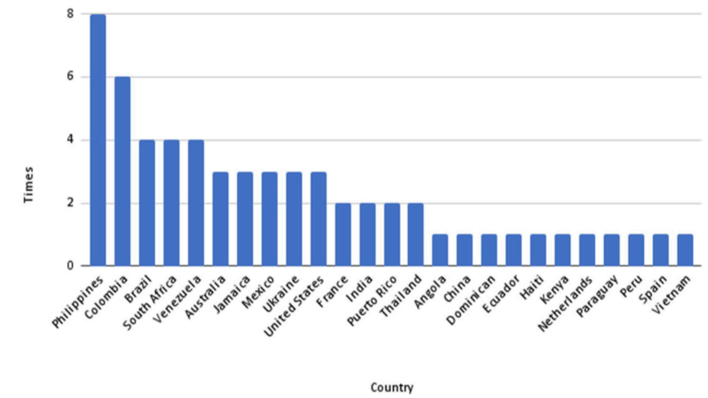

Fig. 1 | Number of finalists by country, 2010-2021

In addition to providing insightful analysis of beauty pageant winning factors, this paper makes several key contributions. It details the selection of the proper algorithms for this work and the end-to-end practice — from initial research on this topic, to collecting and augmenting data for training the forecast model, and finally, interpreting the results with XAI tools.

Methods

Research and Collecting Data

To research this topic, we collected data from the Miss Universe pageant results from 2010 to 2021 and concluded that the Philippines, USA, Brazil, Colombia, France, Venezuela, Australia, Indonesia, Puerto Rico, and South Africa are the top ten countries with the most semi-finalists. The Philippines, Colombia, Brazil, South Africa, and Venezuela are among the top five countries with the most finalists, as shown in Figure 1. We looked for influential factors that could affect pageant placements, such as the contestant's education level, talent training and resources, and language abilities. We also analyzed the country’s profile to identify why certain countries or geographic regions cultivate semi-finalists and finalists year after year.

In the early phase of the research, we faced several challenges including insufficient data points and incomplete features. The Miss Universe pageant has been running for 80 years, however, the data from earlier years is hard to find and often incomplete. Many features are unavailable from events before 2010, and the 2020 Miss Universe event was held in 2021. Due to the Coronavirus pandemic, some features and data in 2020 are incomplete. There are less than 200 data points on the semifinalists from 2010 to 2021. We must first fill in missing data items via smoothing or manual calculation. Additionally, the competition format has evolved significantly in recent years. Considering these two obstacles, we focused on pageant results from 2010 to 2021.

To solve the issue of “small data” in contrast to big data, we looked at a research paper by Robert Lawson and Justin Ross [2] that analyzes the role of market liberalism, measured by economic freedom [8], on beauty pageant success. While economic freedom provides valuable insights, such as access to resources, pageant training, and platforms for self-expression, it alone may not fully explain variations in pageant placement. Beauty pageants are complex, multidimensional competitions influenced by various sociocultural, financial, and demographic factors. To capture a more holistic view, we looked for more data sources and augmented basic data to include additional factors to create more extra points. These factors, direct and indirect, include the height and age of the contestant, the country represented, the region or continent represented, GDP per capita of the country represented, Economic Freedom Index, population, tourism percentage of GDP, the language of the country represented, the male and female ratio of the country represented, and the language spoken by the contestant. By integrating these additional factors, we aim to enhance the granularity of our analysis and uncover deeper patterns that could contribute to a more comprehensive understanding of what drives success in international beauty pageants. Most of the required data for country profiles can be found in The World Fact Book [9] and the U.S. Bureau of Economic Analysis [10].

Data and Feature Augmentation

From the list of beauty pageant semi-finalists (i.e., top 16 or top 21 finishes depending on the year), and finalists (i.e., top 5 finishes), we first collect the pageants’ basic data: country, year of the contest, and position, which are available on the Miss Universe website. We augment the fundamental data with:

- Personal profile, including height, age, education, and language the contestant speaks.
- Country and regional profile, including population, male/female ratio, tourism revenue as a percentage of GDP, GDP per capita, economic freedom index, and geographic region (i.e., Asia, North America, South America, Europe, and Africa).

These additional data points are features that help identify factors that play essential roles in winning the pageants as semi-finalists or finalists. We make countries and regions features so that we can analyze if certain countries or regions have a higher chance of winning. This entails labeling each contestant by their country and broader geographical region, then examining the trends in pageant placement outcomes.

The paper by Robert Lawson and Justin Ross [2] is the first attempt to analyze the correlation between beauty pageant winners and the economic freedom index. Due to the lack of available data points and features, they augmented the data with derived statistical features, such as average, maximum, minimum, variance, etc.

Compared to their work, we extend the feature space by adding personal and country profiles. Our approach is more advanced and produces more accurate analysis results, as it considers additional factors that potentially impact pageant success. We can further augment our training data set with statistical features as well if they prove useful in improving forecast accuracy.

The format of the datasets used for training is shown in Figure 2. Using smoothing techniques or manual calculation, we fill in missing data items, such as the Economic Freedom Index for certain countries in certain years. We then build a forecast model with the XGBoost algorithm [11] to train on various features, like contestant demographics or countries’ economic indicators. Finally, we used SHapley Additive exPlanations (SHAP) [3] to analyze and visualize the importance of each factor and if these factors positively or negatively influence winning the pageant.

Country Represented	Semi-Finalist Name	Population (millio	Per Cap GDP ($t	Economic Freedom	Male/Female Ratio	Country Region	Tourism (% of GD	Year	Position	Height	Born	Age	Top 5
India	Harnaaz Sandhu	1399.716988	1.75	6.66	1.02	Asia	6.8	2021	1	171	2000	21	1
Paraguay	Nadia Ferreira	7.259565	5.2	7.22	1.017	Latin America	14.9	2021	2	175	1999	22	1
South Africa	Lalela Mswane	60.394854	7.08	6.97	0.982	Africa	8.7	2021	3	175	1997	24	1
Colombia	Valeria Ayos	51.670809	7.7	6.82	0.968	Latin America	5.6	2021	4	176	1994	27	1
Philippines	Beatrice Gomez	111.699463	3.16	7.42	1.006	Asia	12.7	2021	5	175	1995	26	1
Aruba	Thessaly Zimmerman	0.107424	30.253	0	0.90285	Africa	63	2021	6	170	1995	26	0
France	Clémence Botino	65.483478	42.6	7.55	0.948	Europe	8.5	2021	7	175	1997	24	0
Puerto Rico	Michelle Colón	2.752463	34.14327	8.24	0.92	North America	6.9	2021	8	183	2000	21	0
The Bahamas	Chantel O'Brian	0.398662	25.7	7.56	0.9455	North America	40.3	2021	9	170	1994	27	0
United States	Elle Smith	333.823623	56.2	8.24	0.97	North America	7.8	2021	10	175	1998	23	0
Great Britain	Emma Collingridge	68.404314	41.1	8.15	0.97	Europe	10.9	2021	11	168	1998	23	0
Japan	Juri Watanabe	125.914522	35.2	7.98	0.949	Asia	7.5	2021	12	170	1994	27	0
Panama	Brenda Smith	4.413024	11.8	7.79	1	North America	14.9	2021	13	170	1994	27	0
Singapore	Nandita Banna	5.917077	59.5	8.81	1.017	Asia	10	2021	14	176	2000	21	0
Venezuela	Luiseth Materán	28.318786	9.5	2.83	0.98	Latin America	9.4	2021	15	178	1996	25	0
Vietnam	Nguyen Huynh Kim D	98.32	2.03	6.26	0.978	Asia	9.2	2021	16	173	1995	26	0
Mexico	Andrea Meza	130.26	10.18	7.21	0.96	North America	17.3	2020	1	180	1994	26	1
Brazil	Julia Gama	214.13	8.72	6.56	0.97	Latin America	8.1	2020	2	177	1993	27	1
Peru	Janick Maceta	33.36	6.3	7.76	0.96	Latin America	9.4	2020	3	177	1994	26	1
India	Adline Castellino	1394.69	2.1	6.56	1.08	Asia	6.8	2020	4	168	1998	22	1
Dominican Republic	Kimberly Jimenez	10.95	7.7	7.58	1.02	Latin America	17	2020	5	178	1997	23	1
Australia	Maria Thattil	25.79	49	8.23	0.99	Austoceania	3.1	2020	6	160	1993	27	0
Costa Rica	Ivonne Cerdas	5.15	12.24	7.62	1	Latin America	13.5	2020	7	180	1992	28	0
Jamaica	Miqueal-Symone Willi	2.82	4.65	7.69	0.98	Latin America	34.7	2020	8	178	1997	23	0
Puerto Rico	Estefania Soto	3.14	33.4	8.22	0.9	Latin America	6.9	2020	9	180	1992	28	0
Thailand	Amanda Obdam	69.48	7.81	6.75	0.96	Asia	21.9	2020	10	170	1993	27	0
Argentina	Alina Luz Akselrad	45.65	9.2	5.78	0.98	Latin America	9.8	2020	11	178	1998	22	0
Colombia	Laura Olascuaga	50.35	5.3	6.71	0.98	Latin America	5.6	2020	12	180	1995	25	0
Curacao	Chantal Wiertz	0.015	24.5	0	0.92	Europe	5.69	2020	13	183	1999	21	0
France	Amandine Petite	68.08	42.6	7.4	0.96	Europe	8.5	2020	14	175	1997	23	0
Great Britain	Jeanette Akua	68.21	42.3	8.08	0.99	Europe	10.9	2020	15	170	1991	29	0
Indonesia	Ayu Maulida	276.36	4.45	7.39	1	Asia	6.23	2020	16	180	1997	23	0
Myanmar	Thuzar Wint Lwin	54.81	1.63	5.81	0.97	Asia	6.387	2020	17	170	1998	22	0
Nicaragua	Ana Marcelo	6.7	1.91	7.05	0.95	Latin America	11.5	2020	18	173	1997	23	0
Philippines	Rabiya Mateo	111.19	3.3	7.43	1.01	Asia	12.7	2020	19	170	1996	24	0
United States	Asya Branch	332.92	56.2	8.22	0.97	North America	7.8	2020	20	171	1998	22	0
Vietnam	Khanh Van Nguyen	102.79	2.72	6.2	1.01	Asia	9.2	2020	21	175	1996	24	0
South Africa	Zozibini Tunzi	58.4	6	6.97	0.97	Africa	8.7	2019	1	178	1993	26	1
Puerto Rico	Madison Anderson	3.65	32.85	8.19	0.9	Latin America	6.9	2019	2	175	1995	24	1
Mexico	Sofia Aragón	127.58	9.95	7.2	0.96	North America	17.3	2019	3	174	1994	25	1
Colombia	Gabriela Tafur	50.34	6.42	6.82	0.98	Latin America	5.6	2019	4	179	1995	24	1
Thailand	Paweensuda Drouin	66.56	7.82	6.87	0.96	Asia	21.9	2019	5	181	1993	26	1
France	Maëva Coucke	65.13	40.38	7.55	0.96	Europe	9.6	2019	6	176	1994	25	0
Iceland	Birta Abiba Þórhallsdc	0.34	68.88	7.9	1	Europe	33.8	2019	7	177	1999	20	0
Indonesia	Frederika Alexis Cull	270.63	4.14	7.26	1	Asia	6.1	2019	8	171	1999	20	0
Peru	Kelin Rivera	32.51	7.03	7.78	0.96	Latin America	9.4	2019	9	177	1993	26	0
United States	Cheslie Kryst	330.15	65.28	8.24	0.97	North America	7.8	2019	10	168	1991	28	0
Albania	Cindy Marina	2.88	5.36	7.81	0.98	Europe	27	2019	11	180	1998	21	0
Brazil	Julia Horta	211.05	8.9	6.63	0.97	Latin America	8.1	2019	12	172	1994	25	0
Croatia	Mia Rkman	4.13	14.94	7.36	0.9297	Europe	25.1	2019	13	169	1997	22	0

Fig. 2 | Miss Universe partial data set after augmentation with additional personal and country profile

Select Algorithms to Build a Forecast Model

To measure the winning factors and if they have a positive or negative influence on pageant placements, we first need to build a forecast model and then analyze the model's behavior per principles of XAI [6]. In the past few decades, machine learning has shown a high capability of capturing complex logic embedded in data [1]. The more powerful a machine learning model is, the more accurate its predictability is. For example, a neural network or deep neural network can perform complex tasks like image recognition; however, it requires a significantly large training data set to achieve high predictability accuracy. High-capability models also have limited explainability. There is a trade-off between prediction accuracy and explainability [12].

With these pros and cons of various algorithms to build a prediction model, we considered the following seven algorithms listed in [12]:

1. Linear regression
2. Logistic regression
3. Time series algorithm, such as ARIMA
4. Decision tree
5. Random forest
6. Gradient Boost Machine
7. Deep neural network

Given our small dataset and the multivariate nature of the problem, we chose this pool of algorithms because they represent a variety of complexity, interpretability, and suitability for structured tabular data, allowing us to find a balance between explainability and prediction capability. The beauty pageant finalist forecast is more complex than what linear regression algorithms and logistic algorithms can handle as it involves complicated, non-linear relationships between various personal, demographic, and socioeconomic factors and their interactions cannot be captured by these simple algorithms. It is not a time series problem as the data points in consecutive years have no temporal relationship since contestants in semi-finals and finals cannot participate again. Therefore, a time-series forecasting algorithm, such as ARIMA, cannot be applied here. The deep neural network is the most powerful algorithm for capturing logic embedded in the training data set. However, deep neural networks may cause overfitting as we only have a few hundred data points and the algorithm cannot support explainability as the relationship between features and the output is incorporated in the weights of the neural network matrix. Also, using deep neural networks to build a model is less desirable due to its low explainability.

Decision Tree, Random Forest, and Gradient Boost Machine are all tree-based algorithms with good prediction accuracy yet high explainability. We picked the Gradient Boost Machine as it is the most potent algorithm among the three and can be automatically explained by SHAP [3]. SHAP values uses a game theory approach to measure each factor's contribution to the final outcome and is a way to explain the outcome of machine learning models. Random Forest can be slow to train on large datasets, even if it improves on Decision Trees by consolidating many trees to reduce volatility and maximize accuracy. In the Gradient Boost Machine algorithm family, we selected XGBoost [11] to build the forecast model for the Miss Universe pageant placements because of its highly optimized implementation of gradient boosting that provides faster training, better scalability, and consistently higher accuracy.

XGBoost, short for eXtreme Gradient Boosting, was developed by Tianqi Chen, having been widely used among Kaggle competitors and data scientists in the industry. As a tree-based ensemble machine learning algorithm, XGBoost constructs several decision trees and ensembles their results to increase prediction accuracy overall. It builds an ensemble, a collection of many trees, rather than relying on a single tree (which could overfit or overlook patterns). Using gradient boosting, XGBoost gradually adds new trees that correct the errors of previous ones, giving the algorithm high predictive power and flexibility that are well-suited for a wide range of tasks including most regression, classification, ranking problems and user-built objective functions.

We used XGBoost, which is available in Scikit-learn [7]. Scikit-learn is a free software machine-learning library for the Python programming language. It features various classification, regression, and clustering algorithms, including support vector machines, random forests, k-means, and gradient boosting. It has been viewed as a standard tool in building machine learning models.

After building the forecast model, we can now use SHAP to analyze and visualize the logic and behavior embedded in the trained model.

Explaining the Forecast Model with SHAP

SHapley Additive exPlanations (SHAP) [3] are frequently used for local explanations for individual predictions. SHAP is based on the theoretically optimal Shapley values from game theory. Shapley values are a widely used approach from cooperative game theory that comes with desirable properties. The feature values of a data instance act as players in a coalition. The Shapley value is the average marginal contribution of a feature value across all possible coalitions. We selected SHAP from a variety of model interpretation approaches because it offers reliable, mathematically supported explanations and allows both local and global interpretability, which makes it particularly useful for complex models like XGBoost. We used SHAP to analyze the forecast model built with XGBoost and visualize the feature's importance and whether the feature has positive or negative impacts on winning.

The first figure we plotted is the Bar plot. The Bar plot in Figure 3 visualizes the importance of each feature ranked by their SHAP values regardless of whether the impact is positive or negative to winning the pageant.

The second figure we plotted is a Bee Swarm plot, as shown in Figure 4, which shows SHAP value of each data point (i.e., observation). The figure shows SHAP values for the most important features of the model while predicting Miss Universe Finalists. Features in the summary plots (y-axis) are organized by their mean absolute SHAP values. Each point corresponds to a person in the study. The position of each point on the x-axis shows the impact that feature has on the prediction for a given individual.

Values of those features (i.e., height and age of the contestants, GDP, country of origin, etc.) are represented by their color. The red color indicates a positive impact, while the blue color indicates a negative impact. We can summarize how to interpret the SHAP summary plots in the following steps:

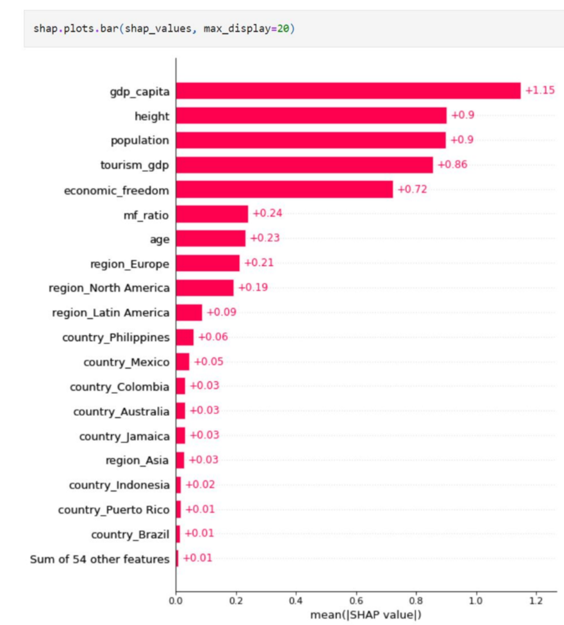

Fig. 3 | Factor importance

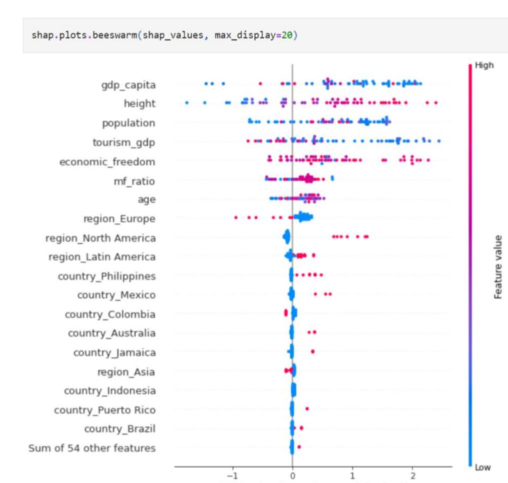

Fig. 4 | Feature importance and impacts (positive or negative)

1. The y-axis indicates the variable name in order of importance from top to bottom. The value next to them is the mean SHAP value of the data points collected. Positive value means that the feature has a positive influence to the outcome. The magnitude of the value is relative to other features. For instance, GDP per capita, with the SHAP value of +1.15, has a stronger impact on the outcome compared to Age, with the SHAP value of +0.23, although both have a positive influence.
2. On the x-axis is the SHAP value.
3. Gradient color indicates the original value for that variable.
4. Each point represents a row from the original dataset.

Results

We can look into the SHAP value of each feature used in the forecast model in Figure 3:

- *gdp_capita*: A lower value indicates a higher chance of winning. Therefore, Miss Universe candidates from countries with lower GDP per capita are eager to win and have a positive social impact on their countries.
- *Height*: A taller contestant has a higher chance of winning.
- *tourism_gdp*: A lower value indicates a better chance of winning. Such a trend signifies that a country with a low percentage of tourism contribution to GDP may try to utilize the Miss Universe to advertise its tourism.
- *Population*: A lower population has a larger impact, but if the population has a positive or negative impact, it is inconclusive as the SHAP values scatter in a wide range.
- *economic_freedom*: A country with a higher economic freedom has a high chance of winning.
- *mf_ratio* (male/female in population): As the average of mf_ ratio is 0.97 and the standard deviation is 0.04, the data shows all countries' male/female ratios are similar, but the analysis shows the country with more women than men tend to have a slightly higher chance of winning.
- *Age*: The age requirement for contestants is between 18 to 28. The average age of finalists is 23.5, and the standard deviation is 2.2. Such analysis indicates that age has little impact on the pageant results.
- Origin of candidates
  - *region_Europe* (1 or 0): a candidate from Europe has a lower chance of winning than other regions.
  - *region_North America* (1 or 0): a candidate from North America, has a high chance of winning. This is probably because Miss Universe is held in the US every year, attracting many contestants to participate in the pageant.
  - *region_Latin America* (1 or 0): a candidate from Latin America, has a higher chance of winning. This further confirms that GDP per capita and tourism revenue as a percentage of GDP play an impactful role in winning the pageant for countries with lower values of these two factors.
  - *region_Asia* (1 or 0): a candidate from Asian countries. It has little impact on winning.
  - *country_Philippines*, *country_Mexico*, *country_Australia*, *country_Puerto Rico* (1 or 0): a candidate is from one of these countries, has a higher chance to win.

The results are interesting as they indicate that GDP per capita and tourism revenue as a percentage of GDP have the most substantial negative influence on winning, meaning wealthier countries, compared to developing countries, do not see the social impact or importance of the pageant events to their countries. Secondly, we found out that the height of the contestants is vital for winning, while the age, education, and the native language of contestants are not; most contestants have at least a bachelor's degree and speak English well. Consequently, the contestants' ages are within a small range with an average of 23.4 years old, even though the required age for the contestants is 18 to 28. These results demonstrate how both structural and individual characteristics—especially those that differ more between countries and individuals—have a more significant impact on pageant results.

Concluding Remarks and Future Work

The Miss Universe pageant is the most viewed and impactful beauty pageant in the world, celebrating women of all cultures and backgrounds and providing positive changes through advocacy and philanthropy. In this paper, we analyze the personal and country profiles of semi-finalists and finalists of the Miss Universe pageant from 2010 to 2021 to research the critical factors for winning the beauty pageants.

Based on the list of beauty pageant semi-finalists and finalists, we augmented the contestants' basic data with a personal and country profile, including male/female ratio, tourism revenue as a percentage of GDP, GDP per capita, and the economic freedom index. Following the principle of XAI, we built a forecast model with XGBoost and used SHAP to visualize the importance of each factor. Gathering our data, we determined whether these factors have a positive or negative influence on winning the pageant. The results are interesting and provide insightful information on winning factors and the broader significance of beauty pageants, revealing how both individual attributes and national context influence outcomes and reflect deeper social and cultural values.

The technical contributions of this paper include:

- How we select proper algorithms and augment the basic data to overcome the issue of "small data", as even a beauty pageant series like Miss Universe with 70 years of history have only a few hundred data points for us to analyze. It is far less than the required training data sizes in a typical machine-learning problem.
- How we work across the whole life cycle of data science from data collection, data analysis, model selection, training, and model explanations.

We can consider a few places to improve the current results further. For example, the forecast model would be more accurate if we could collect data on candidates who did not make it into the semi-finals. We can use their personal and country profiles as negative examples of pageant-winning in contrast to the semi-finalists, which were used as positive examples for model training. Furthermore, SHAP assumes all factors are independent, however, such assumption may not be perfectly accurate. Additional work can be done to analyze the correlations between each pair of factors to reveal further insights on the complexity of beauty pageants and its greater social impact.

Finally, this work can be used as a foundation to study social reasons for why countries with a lower GDP per capita and higher tourism revenue generated more Miss Universe. To do so, we may utilize the Large Language Model (LLM) to analyze some social opinions of the public from these countries toward the beauty pageant event and the motivation of contestants for attending these events.

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ORIGINAL RESEARCH

Salam Meets Shalom: The Impact of Moroccan Traditional Food on Moroccan Jewish Diasporic Identity

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There is substantial research investigating the relationship between traditional ethnic food and diasporas for other ethnicities. Yet, there is a lack of research investigating the relationship between traditional Moroccan food and Moroccan Jewish diasporic identity. Although numerous studies have examined how traditional Jewish practices–as a religious artifact–influence Moroccan Jewish diasporic identity, the role of ethnic identity artifacts like food has yet to be adequately explored. Therefore, this qualitative ethnographic study explores the effect of traditional Moroccan food on Moroccan Jewish diasporic identity through a case-study approach examining one Moroccan-born participant residing in Toronto, Canada, in detail through a semi-structured interview. The participant was asked about his food practices, such as food preferences, food eaten at home vs outside, and the role of Moroccan cuisine in his life. The interview was then followed by inductive thematic analysis, which extracted the following themes: (1) acculturation, (2) apprehension, (3) cultural connection, and (4) normalcy. Overall, these findings align with the surrounding literature regarding the relationship between traditional Moroccan food and Moroccan Jewish diasporic identity. It was found that the consumption of Moroccan food generally strengthened Moroccan Jewish identity within diasporas, thus placing the results parallel with those of similar studies conducted regarding other ethnic groups. Ultimately, this study concludes that there is a positive relationship between the consumption of traditional Moroccan food and Moroccan Jewish diasporic identity. It is recommended that further research be conducted on a cohort of varying socioeconomic status, age, place of residence, and birthplace to examine the effects of Moroccan traditional food on a more diverse participant population.

Though now considered a Muslim-majority state, Morocco boasts a rich history of diverse ethnic groups within its region. The pre-Islamic society of Morocco was inhabited primarily by Amazigh tribal groups, more commonly known as Berbers, who established civilization across the various terrains of the country [1]. However, during the period of 'Peripheral Islam,' when Islam and Judaism were introduced into North Africa, the Amazighs converted to both faiths, thus establishing the beginnings of Judaism in Morocco [1]. However, due to environmental barriers, their influence was limited to Eastern and Northern Morocco [1]. Following the 8th century, the first Arab invasion of North Africa occurred, resulting in the widespread conversion of the Berbers to Islam [1].

During the fourteenth and fifteenth centuries, Sephardic Jews—Jews from the Iberian peninsula—entered Morocco in considerable numbers, settled in major cities, and naturally formed Jewish communities with a European character that differed greatly from the communal nature of the Muslim civilizations there as a result of their cultural and religious differences [2]. As such, a cultural and religious schism that had previously not existed formed within Morocco between the Muslims and the Jews [2]. To further strain relations, upon the French colonization of North Africa in the nineteenth century, the French favored many Jews due to their marginality in North African society. As a result, they often received preferential treatment in French establishments, such as schools [2]. Moroccan Muslims viewed the Jews as part of the oppressive French colonial forces, which contributed to their eventual departure from Morocco.

French colonization and shifting demographics within the Arab world led to the emergence of the Nahda movement, also known as the Arab Renaissance: a nationalistic and traditional reformist attitude overtook Islamic society. The Nahda began in 1850 and ended in 1970, from as East as the Levant to Morocco [2]. During this era, many Jews emigrated from Morocco because they were "inexorably linked to governmental discourse" and faced mistreatment and dwindling political freedom from Muslims, given their new radical attitude [3;2]. As such, Moroccan Jewish diasporas, or international communities, have flourished, with the most studied diasporas being those in Montreal and Israel. For this study, the term "diaspora" will be defined as "cultural-social-political entities, created as a result of either voluntary or forced migration from a homeland, whose members are and regard themselves as of the same ethnonational origin and who permanently reside as minorities in one or several host-countries" [4]. Additionally, the term "cultural/national identity" will be defined as "identity formation outside the homeland and a characterization of diaspora as a lived experience" [5].

Despite their migration, Moroccan Jews have maintained Moroccan cuisine even during the diaspora. Examples of traditional Moroccan food include tagine, couscous, bastilla, and zaalouk. The effect of ethnic food's contribution to diasporic identity is significant because it provides insight into the impact of strictly cultural products on diasporic communities and identity.

Literature Review

There is extensive literature that examines how cultural cuisine is used as a way to form identity and community amongst various ethnic diasporas [5;6]. For example, Cuban food is often a "marker of identity" for Cuban-Americans, meaning it is a way Cuban-Americans claim their ethnic identity despite being nationally American [5]. Similarly, "food practices help to create a sense of diasporic identity" amongst South Asians in the neighborhoods of Huddersfield and West Yorkshire in the UK, further demonstrating how ethnic food helps those in diaspora claim their identity through various contexts [6]. These examples and similar literature illustrate that cultural cuisine is not only practiced in diasporas but also creates a sense of identity amongst them. While some sources demonstrate that traditional food contributes to diasporic identity amongst other ethnic groups, there is a lack of research regarding the contribution of conventional cultural food to Moroccan Jewish diasporic identity. This research is necessary because scholars such as Alex Weingrod and André Levy of Ben Gurion University state that Moroccan Jews have "established their diasporas by contributing to the processes that generated nostalgic feelings among them." However, there is a lack of measurement of what specifically generates these nostalgic feelings [7]. Traditional Moroccan food should be understood as a catalyst for this sense of nostalgia because Moroccan Jews, like other diaspora groups, may also experience/generate "nostalgia in diaspora" through food in that it helps them connect with their Moroccan identity [6]. Although the cultural contribution to Moroccan Jewish diasporic identity is yet to be studied, past literature has analyzed how religion has created a sense of Moroccan-Jewish diasporic identity. Throughout diasporas, it was a "religious identity that was moveable and yet could be transformed into an ethnic identity concerning other Jews in Israel, France, and other parts of the Moroccan Jewish dispersion" [8]. This is further elaborated upon by Henry Green of the University of Miami, who states that Moroccan Jews overseas "continue to practice folkloric Jewish traditions" [12]. A clear example is preserving "a traditional Jewish education" abroad [3]. A common theme has emerged: religious practices and traditions of Moroccan Jewish diasporas have created a sense of identity overseas. There is a lack of research examining the purely cultural Moroccan contribution to Moroccan Jewish diasporic identity, which can be achieved through the investigation of Moroccan traditional food and Moroccan Jewish diasporic identity.

Both in and out of Morocco, the Moroccan Jews are a unique group whose cultural and religious combination's effect on identity has been largely understudied. Other researchers, such as Daniel Schroeter of the University of California, Irvine, believe that the study of how cultural products contribute to a Moroccan Jewish diasporic identity is necessary to understand the antisemitic history of Morocco. He states that since Moroccan Jews have had a "real absence and dwindling presence" in Morocco throughout the past decades, it is ambiguous as to whether cultural products themselves are indicative of Moroccan Jewish identity overseas, thus prompting further research [8]. General thematic research of traditional Moroccan food, a purely Moroccan cultural product, and diasporic identity does not seem to account for Moroccan Jewish communities, warranting further research regarding the link between the two in this specific context. Through this analysis, it will be possible to understand the extent to which Moroccan Jews claim their cultural heritage as a part of their identity. The religious aspect of Moroccan Jews and their historical presence in Morocco distinguishes them specifically from broader, diasporic communities: Specifically, ethnic communities where the correlation between food and diasporic identity has been studied. By employing qualitative research methods, such as ethnography, further research should be conducted to determine the existence of this relationship. The analysis of the impact of ethnic food on Moroccan Jewish diasporic identity may not only aid in determining how historical events have impacted Moroccan Jewish culture regarding national identity, but also emphasize how diasporic identities evolve amongst generations.

Methodology

The following research question was developed to guide the paper: "By employing qualitative semi-structured interviews, to what extent does traditional Moroccan food contribute to diasporic Moroccan identity for second-generation Jewish-Moroccans in Toronto, Canada?"

As stated, the study was qualitative in nature, "gathering participants' experiences, perceptions, and behavior. With this specific study, all aspects of the given definition of qualitative research were examined.

More specifically, the research drew upon the subsection of ethnography: a qualitative research method employed "to describe the characteristics of a particular culture/ethnographic group" [9]. In this sense, the chosen ethnographic group was Moroccan Jews. Ethnography is explicitly used to examine how certain groups adapt to change and how their beliefs, values, and traditions fare through constancy and change.

The first seminal source was Alfonso's thematic analysis of Cuban food practices and traditions in London. Alfonso conducted interviews with Cubans of varying ages and socioeconomic backgrounds living in London to gauge their conceptions of Cuban food and diasporic identity. Therefore, the method of semi-structured interviews was adopted to conceptualize Moroccan food and diasporic identity for this cohort. In this study, various questions were asked regarding food and identity to apply to the interview.

The second seminal source was Chapman and Beagan's case study of the analysis of food practices of Punjabi-Canadian families [10]. Chapman and Beagan conducted individual semi-structured interviews with typical Punjabi-Canadian women who exemplified the greater demographic. Striving to replicate this method, it was decided to revert from Alfonso's multiple participants and instead focus on an intensified case study of a single individual representing the greater Moroccan Jewish community. As such, the participant elected was a 20-year-old ethnically Moroccan-Canadian citizen who had spent most of their life in Canada.

The third seminal source was Parveen's thematic analysis of food practices and traditions of South Asians in the UK. Parveen, like Alfonso, conducted interviews with South Asian women living in the UK regarding their food practices and their relation to their identity. Parveen searched specifically for themes of nostalgia in her interview responses, which was adopted as a part of the thematic analysis for this study.

Based on the literature review, it was hypothesized that themes of nostalgia would emerge in the interview responses and that there would be a correlation between diasporic identity and traditional Moroccan food practices. Specifically, the consumption and cooking of Moroccan traditional food would strengthen diasporic identity among Moroccan Jewish communities overseas.

The participant was sent a consent form in which they consented to being interviewed and recorded. All interview questions were sent to the participant with adequate time (approximately 3 to 4 days) prior to the interview. So, in the event there was any arising trauma or discomfort, participants were able to report it, and the question(s) could be reconstructed accordingly. The participant was asked "Can you name some Moroccan dishes you eat at home or just know of generally?" and "Can you define Moroccan food using adjectives?" [5].

These questions both gauged the participant's food practices and their perception of their Moroccan Jewish identity.

The guide to thematic analysis by Braun and Clarke (2006) was followed, and inductive thematic analysis was conducted. Braun and Clarke's publication was cited in a parallel study examining the foodways of people from different ethnicities residing in Singapore [11]. The guide encompasses five different steps: (1) familiarization of the data, (2) code generation, (3) theme generation, (4) thematic review, and (5) theme definitions and naming. This ensured that a clear understanding and approach to inductive thematic analysis was obtained and the most detailed and accurate themes possible from the interview were extracted.

Firstly, the interview was transcribed and reread multiple times to complete the familiarization stage. Then, the text was broken down into codes, which are specific labels that pertain to a specific text. These codes were then joined to form broader, overarching themes, which were analyzed in relation to Moroccan Jewish diasporic identity. Through this, it was determined whether or not traditional food practices impact Moroccan Jewish diasporic identity.

Results

Upon reading and thematically analyzing the interview with the participant, four themes emerged (sorted alphabetically): (1) acculturation, (2) apprehension, (3) cultural connection, and (4) normalcy.

Theme 1: Acculturation

The first theme identified during the study was that of acculturation. Acculturation is described as "the total adaptive process that occurs in cultural patterning and value systems, group alignments, systems of control, social organization and economy, and in the psychological structures and functions of individuals" [9]. The participant affirmed that living in Canada did lead to assimilation into Canadian culture and way of life in a culinary sense. The following quotes exemplify this:

"When I'm out with my friends, though, we usually eat fast food or at a Western restaurant." "In that case [that I miss breakfast], I usually just have some mint tea or coffee or something quick like oatmeal."

The mention of explicitly Western restaurants and popularized Western dishes such as oatmeal signifies acculturation into Canadian culture through a culinary lens instead of strictly Moroccan cuisine, which would have likely been the response had the respondent grown up in Morocco. For the participants, Moroccan food and culture are not necessarily the dominant foods and cultures to which they are most exposed. The acknowledgment of this exemplifies the effects of the host country's culture on the participant's identity and cultural resonation. The assimilation into Canadian culture is also seen beyond the kitchen into communication when the participant states:

"I only speak English when I'm with my Canadian friends."

Adopting the English language as opposed to strictly speaking Darija, the Moroccan-Arabic dialect, signifies acculturation in a linguistic sense through growing up in Canada. More broadly, in terms of identity, when asked where they are from, the participant responded with:

"I would say I'm Moroccan but raised in Canada."

The acknowledgment of their Canadian upbringing signifies the presence of a Canadian identity, which is obtained through acculturation. The respondent felt that it was significant to mention that they were raised in Canada, which implies that their host country holds importance in their identity.

Overall, acculturation is prominent in the respondents' questions of identity, which puts into perspective the actual influence of Canadian culture on the participant's perception of their identity and familiarity.

Theme 2: Apprehension

The second theme identified during my study was that of apprehension. The respondent demonstrated apprehension in their responses to the Moroccan community in Toronto. When asked, "Do you feel involved in the Moroccan community here in Toronto?", the participant responded:

"Kind of. I have some Moroccan friends, and there are other Moroccans at the synagogue." The lack of surety in the respondents' answers illustrates apprehension in their interactions with other Moroccans and the sense of community in Toronto. This may demonstrate a decreased sense of belonging and unity within the Moroccan community through different aspects of diasporic identity, such as traditions, language, and customs, due to lack of exposure outside of the home environment. Furthermore, when prompted about the type of food that is eaten with other Moroccans, the participant responded:

"It depends. At the synagogue or during Shabbat, we eat traditional Jewish dishes, like Matzo ball soup or challah. However, when my parents' Moroccan friends come home, we only eat Moroccan food." The duality of the answer signifies apprehension towards choosing one identity over another: the respondent instead mentions both in their context without bias. This, in turn, indicates the mixed religious and ethnic identity of the respondents and showcases the impact of both identities on the food that they consume.

Theme 3: Cultural Connection and Nostalgia

The third theme identified was cultural connection. Despite being based in Canada, the participant responded to specific questions with an overarching theme of food and cultural connection to Morocco. For example, when asked about what Moroccan food means to them, the interviewee responded:

"Moroccan food is really a way to connect to my family and my ancestry. It's like a thing of patriotism, pride, and celebration of my culture."

The response highlights that Moroccan food has a connection

to the respondent's heritage and culture through relation to family and heritage, emphasizing the importance of Moroccan food in maintaining ethnic identity. Furthermore, when asked which adjectives describe Moroccan food, the interviewee responded with:

"Delicious, flavorful, nostalgic, reminiscent."

Including "nostalgic" and "reminiscent" exemplifies the connection to Moroccan heritage that Moroccan food brings, stimulating cultural connection via food. In addition, when asked, "Does eating Moroccan food help you identify more with your heritage?" the respondent answered:

"I think it does. Since I don't get to travel to Morocco often, and since food is such an important part of Moroccan culture, eating food like Tajine and Bastila makes me feel more Moroccan in a sense. It is a way for me to relate back to Morocco and that part of my identity whilst living in Canada."

The importance of Moroccan food in Moroccan culture drove the participant to associate Moroccan food with Moroccan culture and identity in the diaspora, as they explicitly mentioned in the context of Canada. For the respondent, Moroccan food is a key component in maintaining Moroccan identity whilst living abroad, thus aligning with the theme of cultural connection when asked about Moroccan food.

Theme 4: Normalcy

The fourth theme identified was that of normalcy. The interviewee demonstrated various signs of consistency in their food practices in their daily life. When asked if they have always eaten Moroccan food at home, the participant responded:

"Yes, almost always."

When followed up with when they eat Moroccan food, the participant answered:

"Usually for lunch and dinner when I'm at home."

The extent to which they eat Moroccan food exhibits consistency and normalcy in their everyday cuisine, demonstrating an increased connection with Moroccan identity. The participant exhibits signs of being nurtured with Moroccan food from a young age, which exemplifies its normalization in everyday life. This, in turn, depicts the correlation between Moroccan food and Moroccan identity throughout the participant's life as a result of their diet, thus magnifying the significance of Moroccan food on Moroccan Jewish diasporic identity.

Overall, the participant demonstrated themes of acculturation, apprehension, cultural connection, and normalcy when prompted with questions regarding the connection between Moroccan food and their identity as an ethnic Moroccan, which was generally a positive relationship.

Discussion

The Moroccan participants living in Canada provided valuable perspectives into their perception of Moroccan traditional food, revealing four significant themes extracted within the context of those mentioned in the results. (1) Residing in a foreign country, despite the large size of the Moroccan diaspora there, results in acculturation to that culture; (2) Identification of Moroccan diasporic identity through food does not guarantee identification through other mediums; (3) Moroccan food serves as a form of cultural connection and incites nostalgia, and (4) Identification of Moroccan identity through Moroccan food is contingent upon its consistent consumption in daily life. In this discussion, conclusions will first be derived from the results, and then the significance and contextual alignment of my findings with existing literature will be discussed. Finally, the potential implications of the study will be indicated, as well as its limitations.

After analyzing the interview, a key finding emerged: regardless of exposure to Moroccan traditional food, gastronomical acculturation still occurs in Moroccan Jewish diasporas. Although the participants affirmed that they frequently consume Moroccan food, they simultaneously consume Canadian food and are still subject to the effects of acculturation, including less Moroccan food consumption. The concurrent frequency of consumption of Canadian and Moroccan food may hamper the extent to which Moroccan food may be concluded as a positively impacting factor on Moroccan Jewish diasporic identity. This generally agrees with the other emerging theme that the identification of Moroccan food with Moroccan Jewish diasporic identity is contingent upon the frequent consumption of Moroccan traditional food. Should the participant have accumulated even more to Canadian food consumption, to the point where it overshadowed Moroccan food consumption in their daily life, it is plausible that the extent to which Moroccan food positively impacted Moroccan Jewish diasporic identity would have been even less. Another relatively significant theme is drawn from the interview: Moroccan food serves as a way for the participant to connect with their heritage and incites nostalgia. However, although they believed that Moroccan traditional food was a way for them to identify with their Moroccan heritage, the same notion was not necessarily expressed when questioned about other mediums, such as traditions and gatherings. This is generally inconclusive with literature surrounding diasporic identity, which states that traditions and practices are a factor of identification for Moroccan Jews abroad [12]. However, it is essential to note that Green's study applies to Jewish religious traditions and not ethnic traditions but relates to Moroccan Jewish diasporic identity.

Overall, the findings of this study around the impact of Moroccan traditional food on Moroccan Jewish diasporic identity generally align with the conclusions of existing literature employing qualitative methods in the field. This, essentially, affirms that Moroccan traditional food positively impacts Moroccan Jewish diasporic identity through the following: familiarity, identity connection, and nostalgia [5,6]. This study contributes to the existing literature by analyzing the effects of traditional food on diasporic identity, specifically for Moroccan Jews and through an ethnic lens, ultimately affirming a positive correlation between the two. Furthermore, in addition to closing the gap in existing research on Moroccan traditional food's impact on Moroccan Jewish diasporic identity, this study also highlights a potential method for Moroccan Jews overseas to connect with their Moroccan heritage through gastronomy, given that the results of the study affirm that Moroccan food has a positive impact on Moroccan Jewish diasporic identity.

However, the study results have also illuminated significant limitations and disregarded the complexities of this research. Firstly, the themes following inductive thematic analysis of the interview demonstrate that Moroccan traditional food's impact on diasporic identity is often regarded within the context of other cultural artifacts that may impact diasporic identity. For example, the participant spoke about their lack of involvement and participation in traditional Moroccan gatherings and their consumption of Canadian food compared to Moroccan food. Both of these cultural products may be considered measures of diasporic identity. In my hypothesis, I predicted that Moroccan traditional food would impact Moroccan Jewish diasporic identity. However, my hypothesis fails to recognize Moroccan traditional food's effects on Moroccan Jewish diasporic identity comparatively and does not account for other cultural Moroccan products. This would have provided a more encompassing perception of Moroccan traditional food and its comparative impact on Moroccan Jewish diasporic identity. Such inconsistency was reflected in my research methodological process, with no questions referring specifically to Moroccan traditional food's importance to diasporic identity within the broader context of other cultural products and practices. Therefore, this limitation may undermine the study's validity in terms of the extent to which Moroccan traditional food impacts Moroccan Jewish diasporic identity. I recommend further research that analyzes the simultaneous diasporic identity impacts of Moroccan traditional food and other cultural products to provide a more holistic understanding of the impact of various determinants of Moroccan Jewish diasporic identity.

Furthermore, a critical limitation to my findings is that due to the small sample size of only one participant due to the niche and slightly inaccessible population of Moroccan Jews overseas in Canada, the results obtained could not be generalized to a larger population of both the Moroccan Jewish diaspora in Canada and other hotspots worldwide, such as Israel and France. Additionally, the aspects of accessibility and religiosity concerning the participant's place of residence are disregarded. The participant selected in this case study is of a median income background and has the resources and funds to consume Moroccan food consistently. However, that means that these results are not only unrepresentative of the Moroccan Jewish diaspora as a whole geographically but also in socioeconomic terms. The answers and results may vary depending on the financial ability of Moroccan Jews overseas to obtain ingredients essential to Moroccan food or the availability of these ingredients in their community. Therefore, this method of a singular case study diminishes the study's applicability to broader Moroccan Jewish populations and their sentiments towards Moroccan food's impact on their identity within the diaspora.

Conclusion

In closing, this study was conducted to identify whether or not Moroccan traditional food impacts Moroccan Jewish diasporic identity in Canada. My inductive thematic analysis reveals that there are four main themes surrounding the topic of Moroccan traditional food and diasporic identity: (1) residing in a foreign country, despite the size of the Moroccan diaspora there, results in acculturation to that culture; (2) Identification of Moroccan diasporic identity through food does not guarantee identification through other mediums; (3) Moroccan food serves as a form of cultural connection and incites nostalgia; and (4) Identification of Moroccan identity through Moroccan food is contingent upon its consistent consumption in daily life. By capturing the experience of a Moroccan Jew living in one of the largest Moroccan Jewish diasporas worldwide, this study adds significant value to the existing scholarly knowledge on the formation of Moroccan Jewish diasporic identity.

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ORIGINAL RESEARCH

Unlocking Potential: Social Capital in Washington University's Prison Education Program

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Washington University's Prison Education Program (PEP), established in 2011, reflects a broader national movement to expand higher education access in prisons following rising incarceration rates and the elimination of Pell Grants for incarcerated individuals. As a private, elite research university located in St. Louis, Missouri, one of the most socioeconomically and racially divided cities in the country, WashU's PEP introduces both opportunities and tensions for program participants. This tension affects how participants perceive their affiliation with WashU, leading to both increased confidence and skepticism about the University's role in their education and post-release opportunities. This essay explores the impact of WashU's Prison Education Program on inmates' social capital, defined as the networks of people's relationships which are productive towards advancing their goals, and compares this experience to research on PEPs in other universities. Like this study, past scholarship also measures changes in social capital to evaluate the effect of a PEP on participants' lives because of social capital's relevance to one's opportunities and socioeconomic mobility, which are essential for inmates reentering society. Due to WashU's status as a wealthy, private research university, affiliation with the University generally increases social capital. To facilitate this research, three faculty members of WashU's Prison Education Project were interviewed and multiple graduates of the program were surveyed about their personal experiences and insights. The results of the study did not prove conclusive, partly due to small sample size and limited interaction with participants. However, two main trends were identified: an increase in social capital due to participating in WashU PEP, which aligns with past scholarship, and the identification of a pattern of complex relationships between participants of PEP and Washington University.

The United States has the highest incarceration rate in the world, at 583 incarcerated people per 100,000 [13]. Additionally, the recidivism rate, or the rate of people returning to prison, is incredibly high. A recent study by the US Department of Justice revealed that on average, 82% of people return to state prison within ten years of release [9]. This was not always the case, though. Between 1980 and 2013, the prison incarceration rate tripled. Sentence stiffening in the 1990s grew the prison population drastically, which, according to public policy researchers Magnus Lofstrom and Steven Raphael, "has exacerbated socioeconomic inequality in the United States without generating much benefit in terms of lower crime rates" [10]. The growth of the US criminal justice system disproportionately affected poor people and people of color and continues to have a negative impact on those communities. In line with the 1990s' "tough on crime" rhetoric, the Violent Crime and Law Enforcement Act was passed, taking away prisoners' ability to apply for Pell Grants, which would help them afford college tuition and supplies [11]. To address high recidivism rates and limited educational opportunities, prison education programs, especially those created by colleges and universities, have become increasingly popular.

Among the most notable examples of prison education programs are the Boston University Prison Education Program and the Bard Prison Initiative (BPI). Boston University's Prison Education Program was the first of its kind and began offering college courses to inmates in Massachusetts state prisons in 1972 [2]. BPI was founded in 1999 in response to the dismantling of many higher education programs in prisons and has graduated over 400 students since [1]. Through the Consortium for the Liberal Arts in Prison, the Initiative takes on a major role in supporting other prison education programs, including the program at Washington University [1].

Washington University's Prison Education Project (PEP) was started in 2011 by six faculty members, led by Professor Emeritus Danny Kohl and the late Professor Maggie Garb [12]. PEP is funded in large part by the Bard Prison Initiative, the Andrew W. Mellon Foundation, and also receives funding from Washington University. Initially launched at a medium-security men's prison, the program expanded to include a women's prison in 2020. With their first class of students having graduated in 2019, 38 students have now graduated from the WashU PEP, including 5 women [12]. The program has succeeded in fostering academic and personal growth for inmates, offering them a liberal arts education and the chance to learn from world-class professors. How has the program, which gives inmates in a rural state prison the opportunity to earn a degree from an elite university, affected inmates' social capital?

The term 'social capital' was first defined by French sociologist Pierre Bourdieu in his 1986 essay, "Forms of Capital" as "the actual or potential resources which are linked to… membership in a group– which provides each of its members with… credit" [3]. Bourdieu continues, noting that the volume of one's social capital depends on “the size of the network of connections he can effectively mobilize… and the volume of capital possessed… by each of those to whom he is connected” [3]. Based on this definition, it is easy to see how social capital is highly dependent on factors that are often out of a person’s control, including the family and socioeconomic situation that they are born into. These factors are also highly correlated with someone’s risk of incarceration, as poor people and people whose family members have been to prison are more likely to be imprisoned themselves [5].

The effects of prison education programs on inmates’ social capital is a subject that has been studied extensively. Researchers Curtis et al. examined higher education in prison. In their 2021 study of 18 formerly incarcerated men at New York state prisons, “Developing Social Capital through Postsecondary Correctional Education”. The men in the study all attended the same education program in a New York state prison. The program was available to any inmate without behavior infractions who was willing to complete a pre-college program before participating in the college program. In their study, the researchers describe social capital as “an invaluable asset in the lives of those who are successful in acquiring the resources necessary to be economically and socially self-sufficient” [7]. Similarly, in 2023, researcher Patrick Conway used a lens of critical andragogy to explore the same topic in Boston University’s Prison Education Program, detailed in his article “Education Changes a Person’: Exploring Student Development in a College-in-Prison Program through Critical Andragogy”. Andragogy refers to the teaching of adults, and Conway cites previous scholarship to frame critical andragogy as “one which prioritizes learners’ personal histories and development toward self-direction, as well as their intersecting social identities in light of the well-documented repressive dynamics inside prisons both within the US and internationally” [6]. Conway’s study included men and women in two Massachusetts state prisons who participated in Boston University’s Prison Education Program, the oldest PEP in the country with over 350 graduates. With this research in mind, I aim to expand upon their work by studying the same topic within Washington University’s Prison Education Project. This study will test the same topics as past scholarship, focusing on changes in inmates’ self-perception and social capital. In addition, it brings in the perspectives of PEP faculty as a new variable in the results. I also compare the demographics and state prison statistics of each program and investigate the role that an education from a prestigious institution has on inmates.

How does an inmate’s social capital change through participating in WashU’s PEP? What differences lie between Missouri prisons and those of the New York and Boston studies? If there are significant discrepancies, why might these exist? If there are not significant discrepancies, this would point to prison education programs being similarly effective in prisons located in very politically and demographically different states. New York and Massachusetts are both strong blue states politically, are home to large, diverse metropolitan areas in New York City and Boston, and are located on the East Coast. Missouri is located in the middle of the United States, has a much larger rural population, and is a strong red state. At a rate of 735 per 100,000, Missouri’s incarceration rate is almost double that of New York’s and nearly triple that of Massachusetts’[17]. Further, the racial demographics of the three states differ. New York has the most diverse population, with the smallest percentage of white people (61%) and the highest percentage of Black residents (15%) [19]. Missouri is around 80% white and 11% Black and Massachusetts is 75% white and 7% Black [18]. Within the prisons of each state, all have higher proportions of incarcerated Black people compared to Black residents in the state, which is in line with data for the entire United States.

Washington University is located in St. Louis, mere blocks away from the famous “Delmar Divide” named after the boulevard that separates a wealthy, predominantly white area from a much poorer, predominantly Black area [4]. The university is a hallmark of the wealthier side of the divide. It is an institution of immense privilege and has historically harmed communities in St. Louis. The University-run website, The WashU & Slavery Project, informs readers that “Several of the institution's founding leaders derived their wealth and power in part through the dispossession of Native Americans and exploitation of enslaved African Americans” [14]. As a more recent example of WashU’s unequal relationship with its surroundings, the University does not pay any taxes on its properties in University City, a region of St. Louis. According to a 2015 report by University City, WashU’s property taxes would generate \$1.61-\$1.86 million dollars [15]. As quoted in an article by WashU’s Student Life newspaper, a 2020 report commissioned by University City found that WashU had a “significant fiscal burden on the City” [20]. However, the university has taken action to become more accessible to people of different backgrounds and make a positive impact among communities that it has historically harmed. Their recent commitment to financial aid and need-blind admissions lowers the barriers to entry for students of diverse socioeconomic backgrounds [8]. The Brown School of Social Work has participated in a project called “Delmar DivINe”, which consists of a coalition of nonprofits dedicated to uplifting North St. Louis City that highlights the area’s potential rather than its deficits [21]. Lastly, the PEP itself is an instance of WashU’s recent commitment to repairing the relationship between the university and the surrounding communities.

Methods

To answer my research question, I interviewed multiple faculty members of the Prison Education Program to learn from their perspectives and sent a survey (Fig 1) to former and current participants in the program. Multiple professors and leaders in the PEP program were contacted for interviews, including current and former directors and professors in the Project. In the end, I was able to interview three faculty members: Dr. Trevor Sangrey, academic advisor for Washington University’s Prison Education Project, Ms. Eileen G’Sell, Senior Lecturer at WashU and faculty member of PEP who taught multiple courses at the men’s prison, and Dr. Meredith Kelling, former PEP academic director and current assistant director of student research and engagement at the Center for the Humanities. The three faculty members’ perspectives were generally consistent, as they all had positive views of their time in the program and were knowledgeable of how WashU's history in St. Louis complicated their students’ relationship with the program. Each interview was about one hour long and consisted of pre-written questions and spontaneous follow-up questions that created an informal and conversational environment, allowing for further exploration into the faculty’s experiences and insights into PEP. The interviews were recorded using an iPhone and were later transcribed.

It is important to note that the results of this survey are limited by the number of PEP faculty that were interviewed, the number of respondents to the survey, and selection bias regarding faculty and PEP graduates. Due to limited access to PEP graduates and PEP faculty, this study’s findings are exploratory rather than generalizable. However, small sample sizes are a common limitation in prison education research, as access to participants remains a barrier. Multiple former and current faculty of WashU PEP were contacted, and ultimately, only three were able to interview within the time frame. Other faculty were unavailable to interview or did not respond after being contacted. Each of the faculty that were interviewed had positive experiences working in PEP, though from their interviews, I was given the impression that the entire team of PEP faculty in general had positive experiences teaching inmates. Still, the experiences of each faculty member of PEP are unique, and the faculty that were interviewed may have had more positive experiences than others. Additionally, while the insights of PEP faculty and participants are compelling and differentiate this study from others, additional perspectives, such as from correctional officers at the prison, non-PEP inmates, program administrators, could contextualize these findings.

In addition to interviewing members of the PEP faculty, I collected data from PEP graduates through a Google Forms survey (Fig 1). I was unable to meet in person with any former inmates due to restrictions on undergraduate research for my class and feasibility of arranging meetings in a narrow time frame. Survey distribution was limited due to insufficient contact information for PEP graduates and the inability to offer compensation. Professor G’Sell, who was also my mentor for this project, sent the survey to two former PEP participants with whom she was still in contact with, and they were encouraged to share it with other graduates. I was not able to access contact information of other former PEP participants due to restrictions on this project as an undergraduate student. In the end, three total participants responded to the survey. This does represent a conflict of interest in the survey respondents, as two out of the three remained in contact with Professor G’Sell, and therefore may not be representative of PEP participants as a whole. Because of the anonymous nature of the survey, it is unknown which of the respondents were in the two in contact with Professor G’Sell and which received it from one of the other respondents.

The survey contained 5 questions about demographics, 4 multiple choice questions, and four long-answer questions about their time at PEP. The multiple-choice questions asked each respondent to choose the option that best fit them regarding the statement “Throughout my time in Washington University's Prison Education Program, I experienced a change in the perception I have of myself” (Fig 1). The options included Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree. This question format was also used to ask about self-efficacy and confidence. Self-efficacy refers to a person’s belief in their own ability to achieve goals and is considered to be an important factor in one’s motivation and ability to learn. Another important term used in the survey is self-perception, which refers to how one thinks about themselves, including their traits, abilities, and weaknesses. Of the four long-answer questions, two asked for elaborations on how respondents’ self-efficacy and self-perception changed; one question asked to describe the impact that studying at Washington University, an elite university, had on their self-perception and self-confidence. The final question provided a space for respondents to elaborate on any of their answers or include any other details that they felt were relevant to their experience at PEP (Fig 1). The survey began with a statement informing participants that the survey was completely anonymous, that all the questions are optional, and informed them that the data would be used as a project for a writing class (Fig 1).

Results

Interviewing the three former faculty members of WashU PEP provided detailed commentary regarding the reality of teaching inmates, as well as the broader context that WashU PEP is situated in, both for the students and the university. To begin, Dr. Trevor Sangrey described the effect that learning from professors from a top-tier university has on students’ confidence. They describe this experience as being “a huge confidence boost, particularly because most of the folks are from this area or are from Missouri, and WashU’s name is recognizable, so [it’s] the idea that they could do equivalent work in… a setting that they would never have had the opportunity to interact with if they hadn’t come to prison” (T. Sangrey, personal communication, April 19, 2024). Dr. Sangrey added that through participating in the program, students prove to themselves that they are capable of doing the work expected of students at a prestigious university, whose backgrounds are very different to the inmates’. Senior Lecturer Eileen G’Sell added to this conversation saying that “for a lot of students, knowing that I was from WashU…, the fact that we wanted to be there, and that we were also getting paid… these legitimizing factors made it seem like this wasn't just a performance” (personal communication, April 23, 2024). Further, Ms. G’Sell noted that being taken seriously, both by fellow students and authority figures, was transformative for the inmates: they took themselves more seriously as a result.

In addition to improving inmates’ self-confidence, Dr. Sangrey noted that the program also helps them realize that a felony conviction does not have to limit the ways they view themselves or the careers they can pursue (personal communication, April 19, 2024). The increase in confidence and change in self-perception that Dr. Sangrey and Ms. G’Sell witnessed was also seen in the studies in Boston and New York, reinforcing the broader impact of such programs. In fact, one of the main themes in the New York study’s results was how inmates’ self-efficacy transformed. The researchers reported that inmates spoke frequently of how receiving an education improved their confidence drastically. Some inmates noted feeling like they had greater control over their lives, as well as setting more ambitious goals for themselves and being confident that they would be able to achieve them [7].

The survey results largely corroborate Dr. Sangrey’s and Ms. G’Sell’s observations and the results of the New York and Boston studies, especially regarding improvements in inmates’ self-esteem and their treatment in prison. For instance, Respondent A noted that the PEP ‘helped [him] prioritize responsibilities, increase confidence, and learn how to be a leader,’ but also acknowledged WashU’s complicated relationship with their community. Of the three survey respondents, two are white men (Respondents A and C) and one is a black man (Respondent B), all are between the ages of 35-50, and all attended PEP between 2016 and 2021. Respondents A and C graduated with Associate degrees in Liberal Arts and Respondent B graduated with a BS in Integrated Studies. The survey was set up to collect easily comparable information while also giving respondents the opportunity to elaborate on those responses. In receiving these results, I appreciate how vital it is to ask long-answer questions, as each person's experience is unique and nuanced. While the participants' answers were very similar on the multiple-choice questions, their responses to the long-answer questions varied.

For example, when asked if their confidence improved as a result of participating in WashU PEP, two of the respondents marked "strongly agree" (Respondents A and B), while the other marked "agree" (Respondent C). However, when asked to discuss the impact that studying at WashU, an elite institution, had on their confidence and self-perception, the respondents had slightly differing responses. Respondent A, who has started a non-profit that helps people returning from confinement, noted that the presence of the university in his life was like "a double-edged sword" (personal communication, April 2024). On one hand, he responded that the program helped him prioritize responsibilities, increase his confidence, and learn how to be a leader, but added that "the University has done more harm in my community than it has good" (Respondent A, personal communication, April 2024). This insight is an example of how WashU's history as an institution complicates PEP students' relationship with their education. This response stood in contrast to the Boston and New York studies, which reported no negative responses regarding the education programs in their respective prisons. However, as a top-tier university with a 16-billion dollar endowment in St. Louis, Missouri- one of the most racially and socio-economically segregated cities in the United States- Washington University has a complex relationship with St. Louis.

Similarly to Respondent A's mixed feelings towards WashU, Respondent B, who continued studying at Washington University's Danforth Campus after his release, reported that studying at WashU "insulated me from many of the pitfalls that ensnare returning citizens into the downward spiral that leads many of us back into cages" (personal communication, April 2024). In addition, he reported an increase in confidence and that studying at WashU gave him opportunities that former inmates without the same education would not have. However, he also wrote that being the first participant in the PEP to study at the Danforth Campus was a "thankless" experience and that he experienced an "inordinate amount of self-imposed mental pressure" to succeed and take advantage of this opportunity (Respondent B, personal communication, April 2024).

In my search for more information about the path from PEP to studying at WashU's Danforth Campus, I interviewed Dr. Meredith Kelling about her insights into PEP and its effects on inmates. Dr. Kelling discussed the complex history of WashU's relationship with the St. Louis area, noting that individuals who grew up in St. Louis, were incarcerated, and then participated in PEP often questioned "'why is WashU here for me now and not… at any stage before I got locked up?'" (personal communication, April 22, 2024). Eileen G'Sell described that in her experience, many students in PEP are "both grateful for the program and aware that to some extent, they're a PR move for the university" (personal communication, April 23, 2024). She expands on this topic, saying that the PEP students "make the university seem like they're doing something that's addressing socioeconomic… and racial inequality, and indeed, they are, but at the same time, it… doesn't change the history of WashU as an institution with a lot of barriers to entry" (personal communication, April 23, 2024). Neither the survey respondents themselves nor the studies regarding the other universities' PEPs mentioned concerns about being used for PR purposes. However, the survey respondents were not asked about this question in specific, and the nature of the interviews with PEP faculty facilitated more in-depth exploration into these themes. These results are evidence of the complex relationship that PEP students have with their degree, with WashU, and with their communities.

Lastly, Respondent C wrote that a WashU degree could help a person overcome their record if they know how to leverage it well. After graduating from PEP, Respondent C continued his education at the Danforth Campus, earning a B.S. in natural science and mathematics from Washington University. In his survey responses, he revealed feeling that "I could accomplish more than even the administration felt I could" (Respondent C, personal communication, April 2024). Upon his release, he pushed to take lab classes when he was released and pursued a STEM education, which is uncommon among graduates from prison education programs. While all three respondents reported benefiting from the program, it is important to also consider their struggles, the complex relationship they and their communities have with Washington University, and the potential areas for improvement within the University and the program.

A final finding of the survey regards the participants' self-perception before and after studying at a prison education program. Respondent A answered that his self-perception was changed through the program, and specifically that it helped him overcome low self-esteem and helped him become a leader. This response aligned with the results of the Boston study, in which participants noted improvements in self-esteem and many of the people interviewed now hold leadership positions in their communities, workplaces, and churches [6]. Respondent B's experience differed, as he marked "neutral" when asked if his self-perception changed during his time studying in the PEP. He explained that his family had instilled the value of higher education upon him when he was very young, and he never imagined that he would go to prison. Despite growing up in North St. Louis during the crack cocaine epidemic (he mentions that everyone he knew had family members in prison), he graduated high school and enrolled in college, but did not graduate. Respondent B describes that, because of how he was raised, "my self-perception was that of a scholar long before my enrollment into WashU PEP. However, after my enrollment, my self-perception elevated to that of a scholar with a renewed purpose and mission" (personal communication, April 2024). This is a departure from the responses in the New York and Boston studies, as well as from statistics on education and incarceration. As Dr. Kelling mentioned in her interview, most people in PEP do not have high school diplomas. In the Boston study, participants did not mention having scholarly self-perceptions before entering prisons [6]. The respondents noted that during and after their education in prison, they experienced positive growth in their self-perceptions because they were educated and because educators and other students in the program treated them with more respect than those outside of the program.

To this point, Sangrey noted that though they and all PEP educators were required to call students by their last names, but that it was much more natural for them to refer to their students by their first names, especially in the women's prison. Sangrey noted that in the women's prison, "there was an ease with people, a sharing of not necessarily personal information, but causal information"

(personal communication, April 19, 2024). Most of the educators and administrators in PEP during Sangrey's time as an academic advisor were women, which could be a contributing factor. In the men's prison, the environment and attitudes between educators and students was much more formal and removed (T. Sangrey, personal communication, April 19, 2024).

Discussion

The experience of being treated very differently within the program versus in prison in general was reflected in the New York and Boston studies as well. This is a significant reason why prison education programs can be so effective and transformative in inmates' lives. As Curtis, Evans, and Pelletier point out, many people who end up in prison were raised in situations where their social capital was not adequately developed, which is often a contributing factor in why some inmates end up in prison. Once in prison, their environment is not conducive to acquiring or developing these skills [7], which one can assume would also make them more likely to return to prison after being released. Conway's research of Boston University's Prison Education Program revealed that inmates described imprisonment, including the treatment they received from correctional officers and other inmates, as "dehumanizing" [6]. Though prison is ostensibly supposed to rehabilitate inmates, elements of being imprisoned, including literally being behind bars, the lack of privacy, and the lack of control over one's daily life can contribute to the feeling of dehumanization reported in Conway's study. Others in the study noted that, although they did not feel unintelligent in prison, they felt out of control of their own lives and disempowered [6]. Education gave them an opportunity to empower themselves and regain some control over their lives.

As demonstrated through the results of the survey and interviews, WashU PEP has been a positive force in its students' lives. Inmates not only have the opportunity to gain academic skills and earn a college degree, but also reported having healthier self-conceptions, a stronger sense of confidence, and increased self-efficacy. These skills set inmates up for a more successful release and reentry into society. Many of the findings of my research, both the interviews and the survey responses, corroborated what was reported in the studies of prison education programs in New York and Boston. An important departure, however, was the factor of Washington University being an elite institution and its complicated history with St. Louis, especially among poor and predominantly African American communities. It is important to acknowledge how WashU's history still affects the institution itself and the St. Louis community today, even if steps are being taken to restore and repair that relationship. Only by recognizing and taking accountability for the institution's role in harmful policies and practices such as gentrification and exclusion can WashU truly be "In St. Louis, for St. Louis" [16]. In the future, Washington University could improve its engagement with PEP alumni through a structured transition program. As Respondent B mentioned, continuing his studies at the University's main campus helped him avoid the "pitfalls that ensnare returning citizens". Yet at the time, he was the first PEP alumni to continue his studies at WashU following his release. Reentering society is a critical and vulnerable time for former inmates, and implementing a system of mentoring and financial support for PEP alumni could make a significant impact on their transition and reduce their risk of recidivism as they navigate reentry with the skills they developed during the PEP. Further research could examine specific ways in which the University could continue to improve and expand its program, as well as surveying more people involved with PEP, students and educators alike.

Acknowledgments

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Appendix

Fig. 1 | Survey

Survey: Social Capital in Washington University's Prison Education Program

My name is Colette Correa-Bruzzese and I am a first-year student at Washington University. am conducting a research project for my College Writing class about the changes than inmates experience in their social capital while studying in Washington University's Prison Education Program. I would greatly appreciate it if you would take the time to complete this survey and respond honestly. This survey is anonymous, but I am collecting demographic information for purposes of comparison. If there are any questions you would prefer not to answer, feel free to select that option or leave a written question blank. Thank you!

Demographic Questions

1. What is your age?

   ____

2. What is your race/ethnicity?

   Check all that apply.

   - [ ] White
   - [ ] Black
   - [ ] Hispanic/Latino
   - [ ] Native American
   - [ ] Asian/Pacific Islander
   - [ ] Prefer not to answer
   - [ ] Other: ______________________

3. What is your gender?

   Mark only one oval.

   - Male
   - Female
   - Prefer not to answer
   - Other: ______________________

4. When did you attend Washington University's Prison Education Program? ie, 2016-2020

   ____

5. Have you completed your degree? If so, what degree did you earn upon graduation from Washington University's Prison Education Program?

Social Capital Questions

For the following questions, please select the option that most closely resembles how you identify with each statement.

6. Throughout my time in Washington University's Prison Education Program, I experienced an increase in confidence.

   Mark only one oval.

   - Strongly agree
   - Agree
   - Neutral
   - Disagree
   - Strongly disagree

7. Throughout my time in Washington University's Prison Education Program, my communication skills improved.

   Mark only one oval.

   - Strongly agree
   - Agree
   - Neutral
   - Disagree
   - Strongly disagree

8. Throughout my time in Washington University's Prison Education Program, I experienced a change in my self-efficacy. Self efficacy is described as an individual's belief in their capacity to act in the ways necessary to reach specific goals.

   Mark only one oval.

   - Strongly agree
   - Agree
   - Neutral
   - Disagree
   - Strongly disagree

9. Throughout my time in Washington University's Prison Education Program, I experienced a change in the perception I have of myself.

   Mark only one oval.

   - Strongly agree
   - Agree
   - Neutral
   - Disagree
   - Strongly disagree

10. Please describe the change you experienced, if any, in your self-efficacy during your time studying in Washington University's Prison Education Program.

11. Please describe the change you experienced, if any, in your self-perception during your time studying in Washington University's Prison Education Program.

12. Please describe the impact, if any, that studying and earning a degree from Washington University, an elite university with name recognition, has had on your self-confidence and self-perception.

ORIGINAL RESEARCH

Ghosts, Gays, and Guillotines: Giovanni's Room as a Baldwinian Gothic

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This paper explores *Giovanni's Room* by James Baldwin through the lens of the Victorian Gothic, positioning the novel within a literary tradition that has been largely overlooked in Baldwin scholarship. While Baldwin's work has been categorized within civil rights, African American, urban fiction, and queer literature, this study argues that *Giovanni's Room* also participates in the Gothic genre, engaging with its ghosts, monsters, and societal taboos. The novel's protagonist, David, embodies a spectral presence, often existing as an observer rather than an active participant in his own life. His ability to imagine and mentally intrude upon distant scenes suggests a ghost-like detachment, which mirrors his repression and internalized shame regarding his queer identity. This portrayal aligns with Victorian anxieties surrounding queerness, where same-sex desire was often framed as unnatural. By analyzing the novel's use of Gothic tropes—haunting, invisibility, bodily possession—this paper argues that Baldwin does not impose queerness onto the Gothic but rather reveals the inherent queerness embedded within the genre itself. In doing so, *Giovanni's Room* engages with and redefines the Gothic as a space for exploring marginalized identities. This study ultimately positions Baldwin's novel as a queer Gothic text, demonstrating how the Gothic has long served as a means of articulating experiences of alienation, repression, and social transgression.

As the memory of James Baldwin is resurrected, and a new Baldwin is pieced together by the contemporary Dr. Frankensteins of the American literary canon, difficulties arise in placing Baldwin into any one category of artistic genre. Baldwin was a lyrical writer of fiction and nonfiction prose, a sharp witness to racial injustice, a literary and social critic—in many ways, he defied the boundaries of any one style of writing. However, existing genres can help to contextualize his work. Many scholars have contextualized his writing into certain categories already: civil rights, African American, urban fiction, and queer literature being among the many categorizations. Within this revivalist scholarship of Baldwin, however, he has hardly been considered a Gothic novelist. Placing Baldwin in the context of the Victorian Gothic may provide a new angle with which his writing can be understood. Without ignoring the many other categories that *Giovanni's Room* falls into, as well as the many ways it defies categorization altogether, this essay views the novel as part of an older genre: the genre of Gothic literature. The ghosts, monsters, and social taboos of *Giovanni's Room*, all set to a distinctly European backdrop, are traditionally characteristic traits of Victorian Gothic literature.

James Baldwin and the Victorian era are two subjects which, for good reason, are seldom discussed in the same breath. The Victorian era was a period that Baldwin would not have enjoyed. Aside from the obvious freedoms he would have been deprived of as a gay Black man, Baldwin, a frequent traveler, also most probably would not have liked the lack of planes and cars. Despite all it lacked, the Victorian era was alive with literature and art. The Aesthetes, like Walter Pater and Oscar Wilde, helped introduce the idea of art for art's sake, which, among other objectives, created a theoretical justification for intense detail. This proclivity for detail is seen in the opening pages of Wilde's *The Picture of Dorian Gray*, where a scene is wonderfully laid out of a studio and a garden—descriptions as intimate and elaborate as those which appear in *Giovanni's Room*. The genre of Victorian Gothic literature, bringing with it the tropes of ghosts and vampires and other undead beings, rose to popularity during the mid-to-late nineteenth century because of the fear and repulsion it inspired. The emergence of this genre was a revolutionary moment in literature where narratives thrived due to wicked, unsettling details. This Gothic genre became a safe space for writing on cultural taboos. As Ardel Haefele-Thomas, a race, gender, and sexuality scholar, outlines in *Queer Others in Victorian Gothic*, Victorian writers used the Gothic genre as a "safe space" for writing about queer identities. Queerness, in the Victorian era, could be explored through the guise of monstrosity. "'Gothic' and 'queer' are aligned in that they both transgress boundaries and occupy liminal spaces, and in so doing," Haefele-Thomas writes, "they each consistently interrogate ideas of what is 'respectable' and what is 'normal'" (p. 2).

Giovanni's Room similarly rips apart presumed homosocial expectations. This essay examines how, within *Giovanni's Room*, monstrous women defy heteronormative standards, ghosts represent hiding in the homosexual closet, and vampires reveal insecurities around queerness. This essay also considers the reasons why Baldwin may have drawn from the Victorian *Gothic* when writing *Giovanni's Room*. Considering *Giovanni's Room* as a Baldwinian Gothic helps show how Baldwin's work illuminates the underlying queerness of the Victorian Gothic genre.

Critical Analysis

If there is one defining characteristic of David, the protagonist of *Giovanni's Room*, it is that he is afraid. As a child, he is haunted by nightmares of his deceased mother appearing before him as an undead, decrepit corpse. Mary Shelley's *Frankenstein*, published in 1818, is a key novel of the Gothic era. Much like what happens to Shelley's character, Victor Frankenstein, David's mother dies when he is young. She appears to David only in dreams. David reports that his mother materializes "in my nightmares, blind with worms, … straining to press me against her body; that body so putrescent, so sickening soft, that it opened, as I clawed and cried, into a breach so enormous as to swallow me alive" (p. 227). This paints a chilling image, one incredibly gothic. It directly reflects a scene in *Frankenstein*, when Victor Frankenstein has a horrid dream:

> Delighted and surprised, I embraced her; but as I imprinted the first kiss on her lips, they became lurid with the hue of death; her features appeared to change, and I thought that I held the corpse of my dead mother in my arms; a shroud enveloped her form, and I saw the grave-worms crawling in the folds of the flannel. (p. 38)

The tone here is similarly somber, piling on decrepit details. These scenes are not only repulsive in their mentioning of worms, caverns, and corpses, but they intentionally emphasize the death of a mother. The death of the mother instills characters with fear from a young age, particularly—and perversely—a fear of women.

Along with the memory of his mother haunting him, David finds himself also fearing a guardian figure who raises him: his aunt, Ellen. She is described "dressed … to kill, with her mouth redder than any blood," a twisted, murderous appearance, with a "cocktail glass in her hand threatening, at any instant, to be reduced to shards, to splinters, and that voice going on and on like a razor blade on glass" (p. 229). The mentioning of blood, along with the shiny and sharp objects of shards, splinters, and razor blades, invokes a sense of danger. As Meg Wesling writes in "'The Grisly Act of Love:' Monstrous Heterosexuality in *Giovanni's Room*,"

> The woman-mother is a powerful presence and a grave threat. Whether the danger is that her body will encompass and extinguish David's, or that she will inflict damage with the sharp edges of shards, splinters, and razor blades, she constitutes a mortal danger. She is not life-sustaining but life-threatening. It seems plausible, in light of these depictions, that David's flight from his natal home is precipitated by not solely his fear of his sexual desire for men but also his fear of annihilation by women. Far from the space of light and safety he conjures up in his fantasies of home, his actual home is revealed to be perilous with the presence of thwarted feminine power; the dead mother and the spinster aunt are, like David, estranged from the benefits of the normative, and their literal powerlessness is transfigured as murderous potential. (p. 450)

This analysis unpacks the queer role of a seemingly dangerous woman feared by a man. *Giovanni's Room* follows in the footsteps of Victorian literature by creating subversive, terrifying female characters, challenging the socially presumed heteronormative love for women by men.

Another perversion of *Giovanni's Room* is that it is, in many ways, a ghost story. It shares similarities, in narrative style, with Henry James' The Turn of the Screw. Written at the tail end of the Victorian era, Henry James' *The Turn of the Screw* is a Gothic ghost story buried under layers of narration. In this short story, a party of people gathers in an isolated country estate. The narrator's friend, Douglas, reads from a transcribed letter by Douglas' sister's governess, telling the tale to the guests. As a result, the narrator of *The Turn of the Screw* is placed several layers away from the original account. While actual ghosts appear throughout this story, the narrator becomes a kind of ghost as well, mysteriously hidden behind the many layers of the text. As queer themes are touched on in *The Turn of the Screw*—namely, a young boy's apparent interest in other boys—the ghostly, removed prose absolves the narrator from any direct involvement. *Giovanni's Room* plays into this tradition of writing. The story happening in David's head does not reflect what is currently happening to his body: a decapitation quite a bit less literal than the one Giovanni fatefully confronts. As a kind of ghost, he is also able to haunt and possess, to intimately explore other bodies while simultaneously remaining distanced from them. Acting like a ghost, David describes queer scenes through a position where he is hidden; in this way, being a ghost serves as a metaphor for existing within the homosexual closet.

David, from youth to adulthood, often confines himself in a room. In his anxiety and curiosity, he paints scenes where he is not physically present, where he is an apparition looking through the wall, too scared to come out and physically enter the scene himself. David's ghostly abilities begin early. A young David is awakened one night in his childhood bed in Brooklyn by the sound of his drunk father fighting with his aunt Ellen beneath him. He listens to the details of their argument, describing the scene as if he were in the room. He is certain "that [Ellen] was standing in the center of the room, with her hands folded before her, standing very straight and still" (p. 230). As they walk upstairs, David wonders, "what they were thinking—each of them. I wondered how they looked. I wondered what I would see when I saw them in the morning" (p. 231). His fear of confrontation causes him to disappear, to remain in his room, away from the action but still, mentally, very much in it. David's vivid imagination and constant wondering allow him to drift right through the floor and drop into the room beneath him, to see their placement and the way they are standing. As the narration returns to David in the present, the perspective from which David is reminded of his childhood, he pictures Giovanni (David's exiled lover) in his prison cell. "I try to see him," David says, "his back to me, standing at the window of his cell" (p. 313). The scene is once again created through David's imagination: "I wonder if he is shaven. And now a million details, proof and fruit of intimacy, flood my mind. I wonder, for example, if he feels the need to go to the bathroom, if he has been able to eat today, if he is sweating, or dry" (p. 313). Though David confesses—"I wonder"—that this scene is a figment of his imagination, his emotional connection to Giovanni is real. With language that is both detached from David and deeply intimate with Giovanni, David floats right into Giovanni's cell. One can see, through a scene invented in the mind of David, Giovanni standing, lonely, trying to peer out the window and over the wall, his hair cut short, hungry, longing for companionship. David's hiddenness, his ghostly narration, grows into a metaphor for staying in the closet.

This metaphor takes shape when David's descriptions get so personal that he not only enters another room, but also enters another body. The first time this begins to happen is with David's first male partner, Joey. Waking up before him, after a night together, David watches Joey's peaceful body, and "that body suddenly seemed the black opening of a cavern … A cavern opened in my mind, black … I thought I saw my future in that cavern" (p. 226). David's mind and Joey's body merge as both become a black cavern. He feels as if some terrible evil is forcing him to enter—to possess—this innocent boy. David is petrified by that unspeakable evil. The expression, "I was suddenly afraid," is repeated four times in this one paragraph. There is no indication that Joey is what is scaring him since Joey is described as "so innocently lying there, with such perfect trust … so much smaller than me" (p. 225). What scares David is himself. He reports that "my own body suddenly seemed gross and crushing and the desire which was rising in me seemed monstrous" (pp. 225-226). As a metaphorical spirit, feeling this urge to possess another body and realizing the queerness of possessing a boy, David questions his own morality. He asks if "the incident with Joey had shaken [him] profoundly and its effect was to make me sensitive and cruel" (p. 232). As desire toward the same gender is perceived by David as unethical and gross, that urge causes David to question his innocence and wonder if he is a monster.

While David flees before settling into the caverns of Joey's body, he commits to a successful possession, fully entering a male body later in his life. In intimate moments, David thinks about the skeleton and skull underneath his partner's skin. David looks at Giovanni and notices "the light in the eyes became a glitter, the wide and beautiful brow began to suggest the skull beneath" (p. 281). Both mentally and physically, David enters Giovanni. He begins to see the world through Giovanni's eyes. Giovanni's face is at once a stranger's and one David knows too well; he describes this paradoxical feeling by addressing that "not all my memorizing [of his face] had prepared me for the metamorphosis which my memorizing had helped to bring about" (p. 281). The alliteration emphasizes "memorizing" and "metamorphosis," drawing attention to the shifting memory of Giovanni's face but perhaps also nodding to Franz Kafka's *The Metamorphosis*, in which a character wakes up in a different body. David, on the day of Giovanni's execution, undergoes a metamorphosis, shifting into the body of Giovanni, noting that "anguish is about to overtake me … My executioners are here with me, walking up and down with me … they are everywhere I turn … I might ask to be forgiven—if I could name and face my crime" (p. 311). The first-person narrator seems to conflate David's and Giovanni's consciousness in a strangely omniscient way. Everything experienced by Giovanni is experienced by David, as if David has traveled into Giovanni's cell and gone even further, through Giovanni's skull, into his physical being. Also implied by Baldwin, however, is that David is an executioner himself, for as he looks around and sees executioners, he is really looking at "walls, windows, mirrors, water" (p. 311), mostly reflective surfaces where he would see his own eyes staring back at him. The act of possession, of allowing himself to enter another's body, of becoming one with another man, is again expressed in the context of David wondering if he is evil, if his proximity and love for Giovanni is a crime.

All of *Giovanni's Room* is told by David, who in the present tense of his recollection, is living alone in the south of France. As he stares out the window and wanders through a house, he is never truly alone. He inserts himself, like a ghost, into scenes from his past. As a child in Brooklyn, he glides into a scene happening in a room beneath him. As an adult in Paris, he submerges into Giovanni's prison cell, describing his punishment and isolation despite not personally being there. David's ghostly ability to transport himself into scenes in which he is not visible transfers into an ability to possess bodies from his past. Possession occurs as a form of intimacy as David begins to enter Joey's body (but stops himself before fully occupying its cavern) and as he enters Giovanni's (seeing through him with X-ray vision and, eventually, adopting his perspective). In both of these instances, David wonders if he is a monster, if possessing another's body—in other words, desiring to be within the body of another man—makes him immoral or cruel.

Furthermore, David's layers of ghostliness (transporting into his past, into rooms where he is not present, into bodies that are not his) are reflective of another layer of ghostliness: the ghostly existence of the author, James Baldwin. Baldwin remains hidden in the sense that his personal identity is buried behind the fictional first-person narrator, David. David's status as a gay American abroad in Paris is one parallel to Baldwin's life that reminds the reader he is like the author, but otherwise, Baldwin's identity is lost. It fades deep into the back of the text as he embodies the character of David. David's phantom narration and his lack of bodily presence indicates that he is hiding; in the room from which he narrates and controls, the walls serve as both a barrier and a consolation. Quite possibly, the room is to David what the homosexual closet is to Baldwin. Its walls are both scary and safe. Baldwin, much in line with a Victorian Gothic tradition, uses a morally ambiguous fictional character as a safe space for portraying his own morally judged sexuality. David possesses the body of Giovanni, and, indirectly, as the one creating the vivid scenes of this novel, Baldwin possesses his body too. Both David and Baldwin fear their homosexuality; they hide to avoid being perceived as monsters. David's room and Baldwin's closet each serve as a liminal space between a prison and an escape; it is like David and Baldwin have chosen to stay in their respective metaphorical chambers, and yet the doors are now wide open. David and Giovanni's relationship becomes an open secret (to the reader and to the other characters in the book), and Baldwin, in simply publishing this book, effectively reveals that he is gay. Still, walls remain around them as they both narrate from the terrifying comfort of invisibility.

Ghosts, however, are not the only gothic element of *Giovanni's Room*. The undead appear in various forms. *Giovanni's Room*, along with being thought of as a ghost story, can also be considered a vampire story. To begin with, Baldwin's description of gender nonconformance is reminiscent of Bram Stoker's description of vampires. In Stoker's *Dracula*, Johnathan Harker—a captive of Count Dracula—asks, "What meant the giving of the crucifix, of the garlic, of the wild rose, of the mountain ash?" (p. 36). If this very question were inserted into the inner monologue of David, it would make near perfect sense, for David finds himself disturbed by similar concerns. David describes a gender nonconforming individual, likely a drag queen, in the following way:

> Now someone whom I had never seen before came out of the shadows toward me. It looked like a mummy or a zombie—that was the first, overwhelming impression—of something walking after it had been put to death … The mouth raged with lipstick. The face was white and thoroughly bloodless with some kind of foundation cream; it stank of powder and a gardenia-like perfume. The shirt, opened coquettishly to the navel, revealed a hairless chest and a silver crucifix … He had been eating garlic and his teeth were very bad. His hands, I noticed, with an unbelieving shock, were very large and strong. (pp. 251-252)

This description has an uncanny resemblance to Bram Stoker's *Dracula*. Along with the mentioning of garlic and a crucifix—two things used in *Dracula* to keep vampires away—is the focus on teeth, lips, and hands. Johnathan Harker comments often on the teeth of Count Dracula. He notes that the Count, "with a grim sort of smile, which showed more than he had yet done his protuberant teeth, sat himself down again on his own side of the fireplace" (p. 27). Johnathan grows infatuated with the red lips of female vampires. He also takes note of Count Dracula's large, dangerous hands, which he notices "were rather coarse—broad, with squat fingers. Strange to say, there were hairs in the center of the palm. The nails were long and fine, and cut to a sharp point" (p. 27). Hands are also one of the defining details of Robert Louis Stevenson's *Strange Case of Dr. Jekyll and Mr. Hyde*. Stevenson writes that "the hand of Henry Jekyll … was professional in shape and size; it was large, firm, white and comely. But the hand which I now saw … lying half shut on the bedclothes, was lean, corded, knuckly, of a dusky pallor and thickly shaded with a swart growth of hair. It was the hand of Edward Hyde" (p. 51). In both *Dracula* and *Jekyll and Hyde*, large, thick hands reveal the monstrosity of a character. The same happens in *Giovanni's Room*, as David views the strong hands of the person he meets as a detail worthy of "shock." The comparison of a gender nonconforming person to a mummy or vampire, or any kind of monster, is grossly disrespectful, yet it simultaneously affirms how the Gothic genre serves as a space for describing identities outside of the status quo.

Even as David is repulsed by this gender nonconforming figure, he later suggests that his own relationship to Giovanni shares some similarities in its queerness to the nonconforming individual's identity. At the end of the chapter where David meets this individual in Paris, David says,

> Giovanni will be rotting soon in unhallowed ground near Paris. Until I die there will be those moments, moments seeming to rise up out of the ground like Macbeth's witches, when his face will come before me, that face in all its changes, when the exact timbre of his voice and tricks of his speech will nearly burst my ears, when his smell will overpower my nostrils. (p. 254)

Here, Giovanni is the one described as undead, with an overwhelming stench. Rising out of his coffin, Giovanni becomes the figure of a mummy or vampire that David, once afraid of, is now seduced by. David dreams of "the touch of hands, of Giovanni's hands, or anybody's hands, hands which would have the power to crush me and make me whole again" (p. 292). David senses that Giovanni's hands hold a monstrous power, like those of the nonconforming person he met, or perhaps those of Dracula's or Mr. Hyde's. However, he now seems to embrace this power. He does not always embrace this power, however, for he begins to question what it means that his lover, Giovanni, is also a monster.

Alone in Giovanni's room, with his fiancé in another country, David finds himself in a position like Johnathan Harker's at the start of *Dracula*. David, of course, is not actually held captive by Giovanni, as Johnathan is by the Count, but he does frequently feel trapped. Giovanni's room is often compared to the bottom of the sea. David says, "Life in this room seemed to be occurring under water" (p. 289), as if he is submerged here, lost and enclosed in the unexplored depths of the ocean floor. David even says, "Giovanni was dragging me to the bottom of the sea" (p. 314). Johnathan Harker, also stuck, finds himself emasculated. He notes that where he sleeps and writes in his journal, "of old, ladies had sat and sung and lived sweet lives whilst their gentle breasts were sad for their menfolk away in the midst of remorseless wars" (p. 45). At the same time, he secretly suggests an enjoyment in being so desired by the vampires trapping him. Stumbling upon a terrifying scene, about to be attacked by vampires, Johnathan, within the chaos of startling descriptions of blood and teeth and horror, slips in that "I felt in my heart a wicked, burning desire that they would kiss me with those red lips" (p. 46). Later, he notes "a deliberate voluptuousness which was both thrilling and repulsive" (p. 47) about the female vampires. Johnathan grows infuriated with being trapped, forced to sleep in what was once a lady's room, but he also suggests a strange pleasure in his situation; in being preyed on. David also becomes frustrated by being trapped in a position of domesticity. David says to Giovanni,

> You want to go out and be the big laborer and bring home the money and you want me to stay here and wash the dishes and cook the food and clean this miserable closet of a room and kiss you when you come in through that door and lie with you at night and be your little girl. (p. 337)

Giovanni and David fight, and eventually, David leaves, never to see Giovanni again. As he leaves, he thinks about apologizing, but David notes, "Any yielding at that moment would have locked me forever in that room with him. And in a way this was exactly what I wanted" (p. 339). David secretly admits that being stuck in this room is something he wants, that it is not only Giovanni's wishes keeping him there, but really, it is his own desire. He cannot say this to Giovanni, or anyone, however. He cannot say that cooking and cleaning and caring for Giovanni, acting as his stereotypical 1950s housewife, is something he secretly does want. To say this would be as strange as Johnathan Harker admitting he secretly enjoys being the object of Count Dracula's and the female vampires' desire. David sees Giovanni as a monster, and despite how obviously in love he is with Giovanni, he cannot find it in himself to admit to any mutual wanting.

Giovanni, like Count Dracula, meets the cruel fate of a blade to his neck. Traditionally, the only way to eliminate a vampire—notorious for being difficult to kill—is decapitation. Count Dracula, with a desire for the blood of all genders, and the act of sucking blood described in a very sexual manner, can be interpreted as a queer character. Much scholarship exists on this topic. As Samantha Kountz and Dr. Isabella Norton state in their 2021 article "*Where There is Love, Why not?": Queer Love and Storytelling in* Dracula *and Bram Stoker's* Dracula, "In light of contemporary discoveries and discussions about Bram Stoker's biography, modern criticism of *Dracula* has often taken a queer stance" (31). The novel *Dracula* ends with a cast of strong, heterosexual men defeating this vampire, performing a supposed public service for the world. Likewise, the guillotine that Giovanni faces through capital punishment is meant to serve as a heroic solution, killing a queer man that most of Paris views as an enemy. The similarities between *Giovanni's Room* and *Dracula* highlight the role of sexuality and gender in the making of a monster—how appearance, sexual deviance, and a disturbance of perceived gender roles are used to paint a character as monstrous.

Giovanni's Room is not the only text of Baldwin's that considers monstrosity and deviance, ideas influenced by a Victorian Gothic mode of writing. In his nonfiction essay, "Equal in Paris," Baldwin discusses a time where he found himself trapped in a prison cell while abroad in Paris. He begins the essay with a seemingly overt nod to Victorian literature, writing out the date and time, reminiscent of a classic epistolary or the iconic line from

Mary Shelley's Frankenstein, "It was on a dreary night of November that I beheld the accomplishment of my toils" (p. 37). "Equal in Paris" begins, "On the 19th of December, in 1949, when I had been living in Paris for a little over a year, I was arrested as a receiver of stolen goods and spent eight days in prison" (p. 101). This nonfiction essay reads as a Gothic tale, telling the story of how Baldwin was arrested and his fear that he would be stuck in that cell for a few days. When he ran away from America, he created a twisted trap for himself. Baldwin's case was eventually dropped, but while he waited behind prison walls, he contemplated Paris' justice system—including the use of the guillotine—and met a handful of characters trapped with him, invisible to the world outside. There were prisoners, "scrapings off the Paris streets," that were old ghostly shells of human beings, "simply the clay which had once been touched," and younger, vampiric men "with faces the color of lead and the consistency of oatmeal" (p. 109). It seems that in Baldwin's own account, monsters exist in hidden parts of Paris. Published just before *Giovanni's Room*, "Equal in Paris" gives us a glimpse into Baldwin's discovery of an unseen layer of Paris. Baldwin wrote that "silence is really all I remember of those first three days, silence and the color gray" (p. 112), a very melancholic, gothic attitude. Through the epistolary-like introduction, the horrid descriptions of the prisoners he encounters, and details like being "led through a maze of steps and corridors" (p. 108), this essay seems to be in conversation with Gothic literature. Perhaps, finding himself imprisoned in Europe, fearing for his life, Baldwin thought of the writers before him who experienced or wrote about similar situations of imprisonment: a line of thinking which would easily have led him to the authors of the Victorian Gothic genre.

It cannot be known if, while in Europe, James Baldwin thought of Oscar Wilde, a Victorian writer who was famously imprisoned and who also spent a portion of his life living abroad in Paris. Intentionally or not, however, Baldwin was likely influenced by Wilde. Wilde, who wrote the Gothic tale of *The Picture of Dorian Gray*, was an Aesthete. As such, he argued in favor of art for art's sake, a theoretical framework for appreciating immense beauty and detail without there having to be a meaning behind it—enjoying art and literature for the pure sake of enjoying it. In James Baldwin's essay "Princes and Powers," Baldwin defends this very theory Wilde helped popularize, saying "art for art's sake is not a concept which makes any sense in Africa" (p. 150). Giovanni's Room is known, among many qualities, for its specificity of detail like the "zinc-covered counter" (p. 259), the "courtyard malevolently pressed," and "the wall paper on the floor, in great sheets and scrolls, in dust" (p. 289). These details—from the dust on the floor to the material of the counter—are much like the details of Wilde's *The Picture of Dorian Gray*, written in just as elaborate and flamboyant of sentences, sentences which run on with descriptions, because beauty, for the pure sake of beauty, is valued, in Wilde's novel, to the highest degree. *The Picture of Dorian Gray* opens with a studio:

> filled with the rich odour of roses, and when the light summer wind stirred amidst the trees of the garden there came through the open door the heavy scent of the lilac, or the more delicate perfume of the pink-flowering thorn. (p. 5)

The title, *The Picture of Dorian Gray*, is a double entendre, for the novel is about a painting of Dorian Gray, but the book itself reads as a painted picture of Wilde as well. Wilde, like Baldwin, paints a picture with words. Furthermore, much like Wilde—and his contemporary, Bram Stoker—Baldwin was inspired by Walt Whitman. *Giovanni's Room* begins with a Whitman epigraph: "I am the man, I suffered, I was there" (p. 219). On the surface, Baldwin—a Black, civil rights era writer—might not seem to have much in common with the Victorians. Nevertheless, he does share, at least with Oscar Wilde, a similar love for language and detail and beauty, and an interest in art for art's sake. In specific comparison to Wilde, he also shares the lived experience of being an imprisoned queer man and of achieving the status of being both a celebrity and an outcast.

After spending time in the prison of Reading Gaol, Wilde wrote a poem titled "The Ballad of Reading Gaol," a dark, pessimistic tale. The long poem ends:

> The man had killed the thing he loved,
> And so he had to die.
>
> And all men kill the thing they love,
> By all let this be heard,
> Some do it with a bitter look,
> Some with a flattering word,
> The coward does it with a kiss,
> The brave man with a sword. (Poetry Foundation)

When Lord Alfred Douglas, Wilde's lover with whom he was tried for crimes of sodomy, asked him what he meant by this poem, Wilde responded, as Douglas records in his 1938 book *Without Apology*, "*You* ought to know" (p. 48). Douglas speculated that what Wilde meant by this poem:

> "was that if one loves anyone very much one is very apt to destroy him or her, or, more exactly, to destroy the image of the person created in one's own mind which is in truth what one loves and worships. You create an image of the beloved and then gradually and inevitably you kill it." (p. 48)

This is a line of reasoning which makes sense for a couple that has been forced apart, with only a mental image of the other to hold onto—and, eventually, to let go of. In *Giovanni's Room*, David similarly contemplates the fate of a socially forbidden relationship. Helping Giovanni move bricks from his apartment, David narrates that

> "it really seemed for an instant that if I did not go to [Giovanni], we would use these bricks to beat each other to death … I dropped my brick and went to him. In a moment I heard his fall. And at moments like this I felt that we were merely enduring and committing the longer and lesser and more perpetual murder." (p. 317)

Here, "lesser and more perpetual" seems awfully reminiscent of Douglas' phrasing, "gradually and inevitably." David and Giovanni do not beat each other to death, but when Giovanni later dies, David seems oddly responsible. In one of the most Gothic moments of the novel, that reads as if it were written by the hand of a Victorian writer, David describes how

> "the hours of this night begin to dwindle and now, with every second that passes on the clock, the blood at the bottom of my heart begins to boil, to bubble, and I know that no matter what I do anguish is about to overtake me in this house, as naked and silver as that great knife which Giovanni will be facing very soon" (p. 311).

It is hard to read this without thinking of the "longer and lesser and more perpetual murder," as if David's failure to kill Giovanni with a brick somehow led to this inevitable, more drawn out death, and now David must live with the pain and guilt of a slower, crueler murder. It is also difficult to not think of the aforementioned "walls, windows, mirrors, water" (p. 311), the mostly reflective surfaces where David sees himself, wondering if he is Giovanni's executioner, if he is a force of evil. *Giovanni's Room* may feel Gothic because it is, in a sense, a more fully realized version of Wilde's own Gothic writing, a rendition of the line "all men kill the thing they love," an account of how a gay man, prevented from being with another man—prevented by himself, by the law, and by the world around him—ends up, somehow, tragically killing the one he loves, destroying the image of his beloved.

Baldwin shines a light on the many queer themes of Gothic literature, conversing with the ideas of Oscar Wilde and painting his own queer, Gothic tale into *Giovanni's Room*. Baldwin, however, was not the only Black twentieth century author to reimagine the Gothic genre. The undead, with all their peculiarities, function as a means of manipulating time. Whether it is Henry James's *Turn of the Screw*, Sheridan Le Fanu's *An Account of Some Strange Disturbances in Aungier Street*, or Oscar Wilde's *The Canterville Ghost*, ghost stories show a dead predecessor communicating with a location's new occupants. Similarly, vampire stories such as Stoker's *Dracula*, Le Fanu's *Carmilla*, and John William Polidori's *The Vampyre*, depict an undead being that is near impossible to defeat, preying on victims for entire millennia. In the twentieth century, these gothic stories served well for American writers contemplating a lingering legacy of racial discrimination, wishing to portray how the problems of their past continued to haunt and occupy their present. The ghosts of *Giovanni's Room* are not as literal as the ghost of Toni Morrison's *Beloved*. *Beloved*, however, contemplates a complex history of slavery in America, while *Giovanni's Room* contemplates a complex history of homosexuality in the Western world. In addition, the vampiric characters of *Giovanni's Room* are not literally vampires, as are the vampires of Octavia Butler's *Fledgling*, but both Baldwin and Butler may have used the traditionally Victorian Gothic trope of vampires to suggest a timeless, persistent struggle. The reintroduction of Victorian Gothic themes into twentieth century Black American literature resurrected the power of the undead: the power, that is, to overlap the past with the present. Ghosts and vampires remind a reader that the past never truly disappears.

There is plenty of reason to believe that James Baldwin may have been interested in the Victorian Gothic—whether that be the overlap in Baldwin's and Wilde's theories of art and life or the context with which other twentieth century writers around Baldwin were considering the Gothic genre. Regardless of James Baldwin's exact intentions, however, *Giovanni's Room* appears to be in direct conversation with Victorian Gothic literature. *Giovanni's Room* explores the monstrosity of women, the invisibility of ghosts, and the repulsion and seduction of vampires, all themes which find their roots in Victorian Gothic novels and can be observed through a particularly queer lens. *Giovanni's Room* does not write queerness into the Gothic; rather, it simply recenters the queerness that has always been lying under the surface of this popular genre. Queerness, after all, is a word that for most of history has meant strange and disturbing. Before it was directly associated with gender and sexuality, it was in some cases another word for gothic. Queerness, now broadly defined as any identity which opposes the status quo, has taken on a new meaning. But it may, in some ways, still be synonymous with the term gothic. *Giovanni's Room*, as a queer Baldwinian Gothic, shows how the Gothic is not only a genre of terrifying, nightmarish tropes, but it is also a necessary space for exploring identities that are unsettling and uncomfortable to the status quo. It is a genre heavily related to queer literature. In recognizing *Giovanni's Room* as a Gothic novel, the parallels between Gothic and queer literature become more apparent. If we can consider this exceptionally queer novel as Gothic, we can begin to reconsider more Gothic novels as queer. Doing so can help create a lineage of queer writing across time. We can explore more thoroughly how contemporary queer literature has been constructed out of the remains of a dead Victorian genre.

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ORIGINAL RESEARCH

Outside the Scope: Tracing the Impacts of Intersectionality's Shift from the Academic to the Public

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How has intersectionality—a term rooted in Black feminist theory and finally coined in the late 80s by Black feminist and legal scholar Kimberlé Crenshaw—become a part of popular discourse in the media decades after it was first introduced in legal theory? What began as a concept and theory closely tied to Black feminism is being used to describe not only the struggles faced by Black women, but also the struggles of other marginalized groups. Who were some of the actors that began to transition intersectionality from the pages of legal theory into the public sphere? Through three case studies: an episode of the podcast *#IntersectionalityMatters* by Kimberlé Crenshaw, the rise of "intersectionality" in Teen Vogue, and blog posts from the Crunk Feminist Collective, I investigate some of the movement of intersectionality from the academic to the public. Knowing how the term moved and who moved it are imperative to understanding the current stakes of intersectionality in American politics.

How has intersectionality—a term coined in the late 80s by Black feminist and legal scholar Kimberlé Crenshaw—become a part of popular discourse in the media decades after it was first introduced? What began as a concept and theory closely tied to Black feminism is being used to describe not only the struggles faced by Black women but also of other individuals with two or more marginalized identities. The understanding of intersectionality outside of Black feminist circles is a direct result of several catalysts, including Black feminists and activists. These activists worked to move intersectionality from the academic sphere into the public knowledge through a variety of channels, including online digital media throughout the late 20th and early 21st century. The accessibility of digital media through the Internet plays a role in why intersectionality is widely understood in the present.

In 1989, legal scholar Kimberlé Crenshaw published "Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory, and Antiracist Politics" in the *University of Chicago Legal Forum*. The intersectional framework outlined by Crenshaw works through race and gender discrimination legal cases to show examples of when the courts viewed Black women either through only a racial lens or a gendered lens. The judicial system ultimately failed to comprehend Black women's issues because they did not attempt to see them through both lenses and recognize that they are impacted by a unique variety of factors. Crenshaw's article further explains the importance of the need for a combined approach with the following metaphor:

> …Black women can experience discrimination in any number of ways and that the contradiction arises from our assumptions that their claims of exclusion must be unidirectional. Consider an analogy to traffic in an intersection, coming and going in all four directions. Discrimination, like traffic through an intersection, may flow in one direction, and it may flow in another. If an accident happens in an intersection, it can be caused by cars traveling from any number of directions and, sometimes, from all of them. Similarly, if a Black woman is harmed because she is in the intersection, her injury could result from sex discrimination or race discrimination. (p. 149)

Crenshaw coined the term "intersectionality" from the above metaphor.

How did this term move from the pages of late 80s legal theory to become a widely used concept within communities of marginalized individuals who face two or more "avenues" of discrimination? Black feminist scholars, like Crenshaw, created and continued to engage with the term outside of their academic circles in online digital media, such as in blogs, online opinion articles, and podcasts. Although Crenshaw's original work was based in law, intersectionality should and could be applied in several areas of life, such as education, politics, sports, and popular culture. In 1991, Crenshaw published a second legal review piece entitled "Mapping the Margins: Intersectionality, Identity Politics, and Violence against Women of Color" that applies an intersectional framework into sexual and domestic violence in the United States. This companion piece continued to evolve intersectionality beyond Black women and solely racial and gendered lenses. Different races, as well as class, were explored in this article. Through examples that outline different aspects of intersectionality, Crenshaw continues to reveal the important aspects of culture and identity that intersectionality works to take into consideration when understanding those who have multiple marginalized identities.

Overall, there has been a substantial increase in the public's awareness of intersectionality. As shown in Figure 1, the rise in the use of intersectionality began to take off in the 21st century, a couple decades after Crenshaw first coined the term.[1] Some of the spread of the concept and term from the academic sphere to the general public can be traced back through the rise and widespread use of digital media in the late 20th and early 21st century. My analysis will focus on *The Crunk Feminist Collection* and *Teen Vogue* as sites of intersectionality in the digital media, as well as Crenshaw's own continued contributions to the spread of intersectionality. Crenshaw is active in the digital space through her organization the African American Policy Forum and their podcast *#IntersectionalityMatters*, which will serve as the final point of my analysis. Finally, my analysis will explain the stakes of understanding the digital media's role in promoting intersectionality, especially in context with the present political realities in the United States surrounding education and diversity, equity, and conclusion.

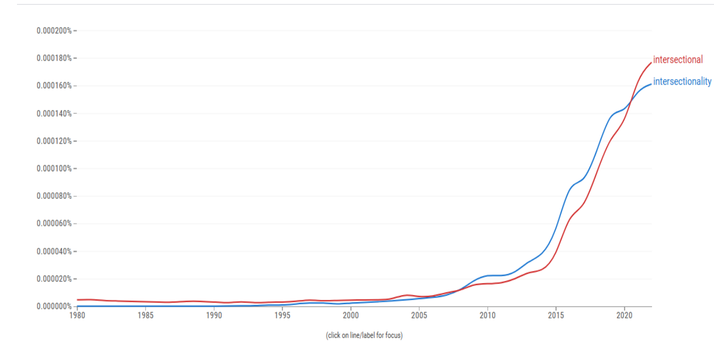

Fig. 1 | Google Ngram of the terms "Intersectionality" and "Intersectional", 1980-2025. Captured by the author.

Literature Review: Defining Intersectionality

> And to boot, there was no name for this problem. And we all know that, where there's no name for a problem, you can't see a problem, and when you can't see a problem, you pretty much can't solve it.
>
> -Kimberlé Crenshaw, "The Urgency of Intersectionality" (2016, 18:39)

One of the biggest results of intersectionality's move from the academic to the public as a result of digital media platforms is the wide array of definitions and understandings of what "intersectionality" actually is. In "Mapping the Margins" and "Demarginalizing the Intersection," Crenshaw defined intersectionality as a theory that addressed the "gap" in anti-discrimination law. For my paper, which seeks to understand intersectionality outside the scope of the law, I will use the following definition from scholar Kathy Davis (2008). Their research focuses on how intersectionality has become a "buzzword," which is a similar claim in my research, so I chose their definition:

> 'Intersectionality' refers to the interaction between gender, race, [class,] and other categories of difference in individual lives, social practices, institutional arrangements, and cultural ideologies and the outcomes of these interactions in terms of power. (p. 68)

Intersectionality can be both a practice and way of thinking, as well as a way to describe someone or something's approach towards something (i.e. intersectional thought, intersectional feminist) (Kanai, 2020). The definition above is not Crenshaw's, but I appreciate how this definition encompasses the many areas of life in which these interactions can occur yet puts the original lenses on their own. I insert "class" into this definition because both of Crenshaw's legal publications address the "gap" between race and gendered experiences for Black women and speak to how class also plays a role in the lived experiences of Black women.

While I have chosen a definition above that best serves the premises of my work, the ambiguity of intersectionality is both a strength and a weakness of the theory. Its wide interpretation has been used by others who "miss the mark" on what intersectionality ultimately hopes to achieve. For example, research exploring intersectionality in the digital feminist knowledge found that some people confuse "intersectionality" with a "diversity" framework, which seeks to "[privilege] the inclusion and recognition of difference" (Kanai, 2020, p.521). Below is a chart that summarizes research findings done by Akane Kanai, a scholar in Australia, who sought to understand the many ways by which individuals who self-identified as female scholars came to understand what intersectionality was:

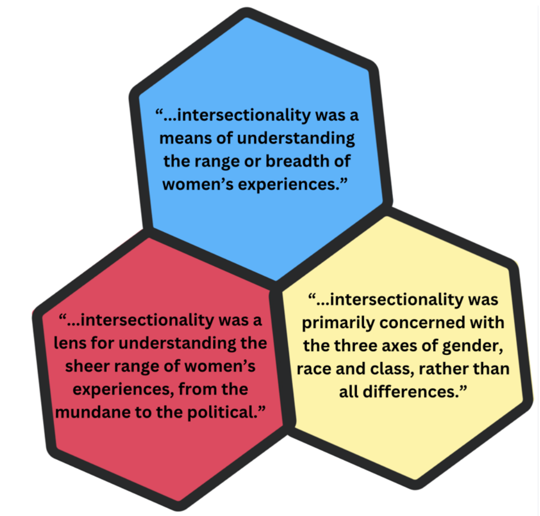

Fig. 2 | Sample interpretations of "Intersectionality". Created by the author.

As demonstrated by the visual above, there is much variance in the definitions outlined above. A result of intersectionality's movement is revealed, showing the theory has begun to take new shape and meanings. Much like the game of "Telephone," the more avenues that an idea, term, or concept travels—in this case, intersectionality—means that more and more people can engage with it. At the same time, the multitude of channels leads the idea, concept, and term further and further away from the original source. This allows for multiple instances of other people to twist, stray, and even change the original meaning of an idea, term, or concept. An example of this is not only seen in the diagram above, but most notably with intersectionality's ties to critical race theory and its attack by the "right" in American politics. Although my research will not cover the political right's construed views of "intersectionality," it is a point that is deserving of research and consideration. This is especially important and timely, as the United States begins the second term presidency under Donald J. Trump. At the same time, straying from the original source allows for others to expand upon and build the theory into something more than it was. The writers of the Crunk Feminist Collective, *Teen Vogue*, and even Crenshaw herself have continued to expand intersectionality's applications outside the scope of the law.

The Origins of Intersectionality

> "She is confronted by both a woman question and a race problem and is as yet an unknown or an unacknowledged factor in both."
>
> -Anna Julia Cooper, "The Status of Woman in America" (2017, p. 76)

Crenshaw is credited with coining the term intersectionality, but she was not the first Black woman to think about how race, gender, class, and sometimes sexuality, all work together to create the lived experiences—both positive and negative—of Black women in America. Although Crenshaw's work in "Demarginalizing the Intersection" and in her second legal review article, "Mapping the Margins: Intersectionality, Identity Politics, and Violence against Women of Color," are widely credited with coining the concept and idea of intersectionality, Black feminists, such as Sojourner Truth, Anna Julia Cooper, Frances Beale, and Angela Davis spoke and wrote about intersectionality.

200 years prior to Crenshaw coining the term, Sojourner Truth was pioneering for intersectional thought in American society. Her speech "Aren't I a Woman"[2] can and should be seen as an early example of how an intersectional approach was necessary to understanding Black women's lived experiences. Anna Julia Cooper (1892) is another early thinker of intersectional thought. Her essay, "The Status of Woman in America," shares observations surrounding the many ways women have progressed in the shifting American landscape, paying respect to Black women's position in overcoming both racial and gender barriers. A few other contributors to intersectional thought include (but are not limited to) Frances Beale and her "Double Jeopardy: To Be Black and Female" (1970) and Audre Lorde, who added sexuality into her intersectional thought in the late 20th century (Guy-Sheftall, 1995, pp. 145, 230).

In 1977, a group of Black feminists led by Demita Frazier, Beverly Smith, and Barbara Smith published the "Combahee River Collective Statement," which is seen as an integral text in intersectionality (Anders, 2019, para. 4). The statement details the collective's commitment to "…struggling against racial, sexual, heterosexual, and class oppressions" (Hull et al., 1982, p.13). They understood that many of these aforementioned types of oppression are "interlocking," creating the lived experiences of Black women.

In the 1980s, Angela Davis published *Women, Race, and Class*, which explores intersectional questions within the context of the women's rights movement. bell hooks [sic] (1981) published *Ain't I a Woman? Black Women and Feminism*, the first of several books detailing contemporary Black feminism (Guy-Sheftall, 1995). Her title is an ode to Sojourner Truth's speech. In 1982, scholars Patricia Bell-Scott, Gloria T. Hull, and Barbara Smith created an anthology of essays in Black Women's Studies known as *All the Women are White, All the Blacks are Men, But Some of Us Are Brave.* Their collection, which also included the aforementioned "Combahee River Collective Statement," encouraged the path towards intersectionality by calling for a focus on "multilayered oppressions" of Black women through an emphasis on Black women's studies (p. xx). In the introduction of their work, Hull and Smith speak about "the politics of Black women," urging for the understanding of the "general political situation of Afro-American women" and "the necessity for Black women's studies to be feminist, radical, and analytical" (p. xvii). Their work explored Black women in relation to feminism and anti-racism and highlighted the efforts of Black women in the social sciences, natural sciences, and literature. *But Some of Us* also suggested further reading on Black women's work in music, photography, and other archival materials from the 19th and 20th centuries.

In the opening lines of "Demarginalizing," Crenshaw (1989) makes a note stating that she hopes to use *All the Women are White, All the Blacks are Men, But Some of Us* as a "point of departure" (p. 139). She hopes to build off of and contribute to the canon of works on intersectionality featured in the anthology. Consequently, Crenshaw analyzes three court cases: *DeGraffenreid v. General Motors*, *Moore v. Hughes Helicopter*, and *Payne v. Travenol* to show what is at stake with the absence of intersectionality being recognized in the law.[3] In the *DeGraffenreid* suit, five Black women sued General Motors because their seniority system "perpetuated the effects of past discrimination against Black women" (p. 143). The courts ruled in favor of General Motors because the law did not recognize Black women as a protected class, only race and sex separately. As a result, Black women could not claim sex discrimination. Although no Black women were hired before 1964, white women were hired during this time frame. The race discrimination claim was dismissed soon after the court refused the sex discrimination claim. The courts ruled that "Congress either did not contemplate that Black women could be discriminated against as 'Black women' or did not intend to protect them when such discrimination occurred" (p. 143).

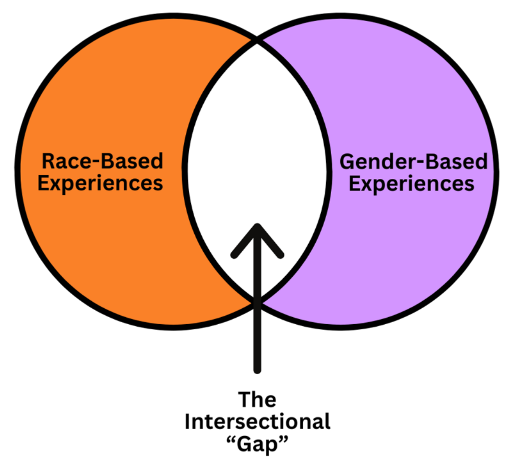

Fig. 3 | The Intersectional Gap. Created by the author.

Although Black women do fall into two protected classes, a gap exists between these two classes. While the lived experiences of Black women exist within this gap, the law is not set up in a way that acknowledges there is a gap. Even today, legal remedies within the gap for Black women still do not exist, as intersectional cases are still largely unsuccessful in the courts.[4]

Crenshaw concluded that as the law stands, "Black women are protected only to the extent that their experiences coincide with those of either [Black men or white women]" (p. 144). This is exacerbated by the legal precedent explored in the second and third cases, *Moore v. Hughes Helicopter* and *Payne v. Travenol*, where Black women were denied the opportunity to represent women and Black people, respectively, as questions about their ability to accurately represent each group were raised. These cases led to further alienation of Black women in the legal realm, as the courts "…treated Black women in ways that deny both the unique compoundedness of their situation and the centrality of their experiences to the larger classes of women and Blacks" (p. 150).

"Demarginalizing" mainly calls for redress of the law to understand how race and gender play out for Black women and other women of color. Most of her examples in the piece, however, include aspects of classism that make these lived experiences even more complex, as many of the plaintiffs in the cited case law are

within the working or middle class. Their socioeconomic status plays a significant role in their lived experiences as much as their race and gender. Intersectionality gives us a way to think about these issues simultaneously; to continue championing the racial and gender equality that early feminists, like Sojourner Truth, spoke of two centuries ago even without the term. Intersectional frameworks need to be created in order for the law to address this issue and match the lived experiences of Black women. The existing frameworks cannot be altered. A new way of understanding the "interaction of race and gender" and the resulting triumphs and hardships that make up the Black female lived experience, however, can be found through intersectionality (Crenshaw, 1989, p. 141)

The Combahee River Collective (1982) hoped to "…combat the manifold and simultaneous oppressions that all women of color face" (p. 13). This example shows that in some instances, intersectionality was meant to encompass more than just the lived experiences of Black women. "Demarginalizing" was not supposed to be the only way by which intersectionality can be thought through and applied to only Black women. Crenshaw (1991) emphasizes the "openness" of intersectionality in her second law review article. Going outside of the scope of intersectionality's original application could explain why there are many ways in which intersectionality appears.

"Mapping the Margins" focuses its impacts on sexual violence, domestic abuse, and rape for women of color. In the piece, Crenshaw dives into different types of intersectionality, further expanding the scope and understanding of what intersectionality looks like as a theory and thought framework. Crenshaw outlines three specific types of intersectionality: structural, political, and representational. Structural intersectionality emphasizes women's location at the intersection and most closely aligns with the intersectionality explored in "Demarginalizing." An example of structural intersectionality given by Crenshaw is how immigrant women of color often cannot report instances of domestic violence because of their status and/or lack of protection from deportation without their husbands. Worse still, immigrant women face upending their entire families if they report abuse and reveal that they are undocumented (pp. 1248-1249). Political intersectionality explores how women of color sometimes face the dilemma of groups with different goals, such as how releasing statistics on domestic violence in Black and brown communities feeds into stereotypes about angry and uncontrollable men of color, despite its benefit for women of color advocating on a feminist agenda (pp. 1252-1253). Finally, representational intersectionality explores how women of color are represented in popular culture as well as how women of color are seen culturally. An example of representational intersectionality in popular culture is Alice Walker's *The Color Purple*, and how the protagonist Celie, her relationship to her father and Mr.____ (Mister), and the male/female relationships between several of the characters portray Black women, Black men, and Black male/female relationships. Celie can be seen as a hero for women, especially those who suffer from domestic abuse, as she stands up to Mister. It can also be seen as perpetrating Black male stereotypes, resulting in what seems to be a step forward for Black women at the expense of Black men. Crenshaw also includes examples of other cultural practices, such as how Asian women are taught to save the honor of their family over everything, "obliging women not to scream rather than obliging men not to hit," and women of color not reporting domestic violence because of a "general unwillingness among people of color to subject their private lives to the scrutiny and control of a police force that is frequently hostile" (p. 1257).

Crenshaw's legal review articles set the groundwork for intersectionality as a term. It would slowly begin to grow in the years to come in a number of ways, both inside and outside of the academic circle. Intersectionality could sum up the thought process that understood multiple identities could create unique lived experiences. Intersectionality also emphasized the importance of understanding this dynamic in "individual lives, social practices, institutional arrangements, and cultural ideologies" (Davis, 2008, p. 68). Crenshaw's efforts to name the theory that so many Black female scholars and activists began to notice and articulate decades before her channeled the existing momentum behind intersectionality. Giving this framework a name helped make it more accessible for people to find intersectionality and begin to unpack it, including content featured in online digital media platforms.

The Early Digital Dispersal: A Case Study of The Crunk Feminist Collective and Hip-Hop Feminists

> "…One man said to me, the question is "What matters more? Your Blackness or your womanhood?" To him I replied, "Find me the moment in which I'm not one of those at exactly the same moment I am the other and I will answer your question."
>
> -Brittney C. Cooper, The Crunk Feminist Collective (2017, p. 33)

Black people have always used a number of unorthodox channels as spaces of community discourse. Barber shops and beauty salons, for example, were not only places for people to get their hair done, but also sites where Black people could meet, speak freely, and share ideas with one another. Schools and other formal channels were not always the safest options for Black people to engage in discussions about their culture. It is not surprising that Black women used the Internet as another space for discourse and discussion of ideas. Over time, digital spaces have come to play large roles in the identity formation of not only Black girls and women, but for many individuals who have learned to rely on the Internet in their everyday lives. This is especially true for those who may not find their histories traditionally taught in schools. Previous research has been done to support this claim:

> …online culture in general [is a] crucial gateways to political [conceptualizations] of identity…young people often adopt explicitly self-educative practices in relation to their online travels. For young Black feminists, digital networks also allow an easier and more forceful articulation of their own knowledge, experiences and perspectives on racialised and gendered social life than is possible in face-to-face settings. (Kanai, 2020, p. 522)

Brittney C. Cooper, along with Robin Boylorn and Susana Morris, are the founders of the Crunk Feminist Collective, an online platform that promotes ideas of Black feminism and intersectionality. The three consider themselves to be "hip hop" or "crunk" feminists. The term "hip hop feminist" was coined by Joan Morgan, a scholar and Black feminist best known for her 1990s work *When Chickenheads Come Home to Roost*. Cooper, Boylorn, and Morris grew up in the 1990s, a time when Black women faced a myriad of labels and stereotypes like "welfare queen" and "baby mama." Alongside these negative connotations were positive and empowering Black female portrayals that coincided with the rise of female representation in hip hop. When Boylorn, Cooper, and Morris entered graduate school together, they began to embrace the swagger and resistance that so many of the women and female emcees they grew up watching did in hip hop: Queen Latifah, Left Eye, Lil' Kim, MC Lyte, and Lauryn Hill. The Crunk Feminists hope to embody their boldness of these Black women on the pop cultural stage in their pursuit of Black feminist understanding.

After they completed graduate school, Cooper and Boylorn decided to revive the community they had found in one another. As women who could be seen as "breaking into" the academic sphere as first-generation students, the crunk feminists wanted to make space for "Black and brown women who loved hip hop but didn't love sexism could say what needed to be said" (pp. 2-3). The Crunk Feminists Collective was launched on March 1, 2010 as an online community that created space for women to be in dialogue and respectful discourse with one another, wrestling with the many issues that impacted Black women at the time.

In 2017, the Crunk Feminist Collective published a selection of essays originally published on their blog entitled *The Crunk Feminist Collection*. The introduction of the collection of essays specifically outlines how the goal for both the blog and the consequent anthology was never to be on the same page, but simply to create a safe space. No feminist is identical in their politics or even race, and those values are present in their published collection of essays and posts. The individuals in the collective and even some of the authors of the essays in the Collection are not Black, furthering their desire for a shared space that engages in discourse and dialogue.

The crunk feminists are working hard to create something that can easily be engaged by a myriad of people. Not only is their platform available online, but their integration of "crunkness" into more complex concepts like Black feminism, gender politics, family dynamics, and even community issues helps make these seemingly complex topics more accessible outside of academic circles.

Using the Internet as a safe space does not come without challenges. Interacting on publicly digital spaces opens up these "safe spaces" for surveillance or interaction by those who may not share in the identities of the women "talking back" in these spaces. It was not always a bad thing, as observing and interacting in these spaces allowed for people who may not directly agree or relate to the lived experiences of the women of color who wrote the blogs the opportunity to engage, participate in dialogue, and learn something outside of their worldview. At the same time, however, it allowed opponents, and even internet trolls, the agency to fuel discord. The Internet is known to be a site where typical social pressures and social desirability is shifted. As these social dynamics shift, people act more boldly with both good and bad intentions.

The Collective, along with other digital spaces, was one of many "platformed Black feminist communities" that allowed for Black women and femmes to continue to be in dialogue with one another, even if not physically located near each other (Peterson-Salahuddin, 2022, p. 1). It also allowed for the performance of "talking back," an act of resistance against their oppressors, even if the oppressed people did not directly interact in these spaces (pp. 6-7).

One essay in particular posted online and later published in the collection by Britney C. Cooper applies intersectional thought to a modern context. "My Brother's Keeper and the Co-optation of Intersectionality" is an honest-yet-factual analysis of President Barack Obama's "My Brother's Keeper" initiative. From the Obama foundation website, the initiative was first started in

> …February 2014, in response to the death of Trayvon Martin. The program sought to address the persistent opportunity gaps boys and young men of color face and to ensure all young people can reach their full potential. We believe communities are the unit of change to realize improved life outcomes for boys and young men of color. Research shows that the collective work of community leaders, members, and public and private agencies pursuing the same goals for boys and young men of color can lead to sustainable, place-based change. (paras. 2-3)

Cooper is enraged by this initiative because of not only how it seeks to only address issues within the Black community for men and not women, but also the thirty women who co-signed the initiative. Cooper laments,

> "In a moment when it is so clear that the war on women is real, I wonder how Black women can accept analyses coming out of the White House re: [My Brother's Keeper] that marginalize Black women's struggle… Do we really believe that men have it worse than we do?" (p. 142)

Most of her essay outlines the struggles faced by Black women, echoing the political intersectionality that Crenshaw details in "Mapping the Margins." Cooper talks about how "to deal with Black women's struggles would be to have to confront issues of male privilege, rampant sexism, and copious amounts of sexual and physical violence perpetrated on Black women at the hands of Black men" (p. 143). Political intersectionality explores how women of color sometimes face the dilemma of groups with different goals, such as how releasing statistics on domestic violence in Black and brown communities feeds into stereotypes about angry and uncontrollable men of color, despite its benefit for women of color advocating on a feminist agenda (Crenshaw, 1991, pp. 1252-1253). Much of Cooper's argument centers around ideas of intersectionality that are more accessible for the many types of people who may come across the blog post. People who do not have a background in feminist theory, or even those who do not play close attention to the politics of President Barack Obama, could understand Cooper's application of intersectionality within the essay. Cooper even mentions Crenshaw and her work twice in the post. The first mention is of Crenshaw's African American Policy Forum and their letters—one signed by 200 Black men and the other signed by over 1,400 women of color—calling for inclusion of women and girls in Obama's "My Brother's Keeper" initiative. The second mention is at the end, when Cooper summarizes the theories outlined in "Demarginalizing the Intersection," explaining the employment discrimination faced by Black women and "the gap" they sometimes find themselves in (p. 146). Cooper's direct mention of Crenshaw helps bridge the theory back to its original source. Giving people a modern example with "My Brother's Keeper" strays away from the original legal case examples, but it makes it far more relatable to people who are not familiar with case law.

Another article that explores intersectionality in the Collection is entitled "SlutWalks v. HoStrolls." This article, first released a few years before Cooper's My Brother's Keeper piece, echoes similar sentiments of intersectionality, but from a gendered perspective. The context of the article comes from SlutWalks Toronto, "…an activist response to the ill-informed, misguided, words of a

Toronto police officer who suggested that 'women should avoid dressing like sluts in order not to be victimized'" (p. 47). Cooper's issue does not come from the desire of the women to stand up against the words of the police officer and take a stand against victim-blaming in sexual assault. Her issue instead comes from the mission statement of the organization, which stated "they are 'tired of being oppressed by slut-shaming; of being judged by [their] sexuality and feeling unsafe as a result,' they are reclaiming and reappropriating the word 'slut'" (p. 47). Cooper's main point highlights how the SlutWalk movement may come off tone-deaf. These women, who want to take a stand by reclaiming the world "slut," may not truly understand what it means to be defined by terms like slut, jezebel, or ho. This statement by Cooper could be seen as a double standard, especially surrounding the use of the n-word within Black communities, which she addresses in her work. The main point of the essay lies in the need for an approach to sexual violence activism that encompasses the varied identities of women who may face it. While a SlutWalk may be empowering for some, it leaves others out. This type of marginalization can be compared to the marginalization of Black women that Crenshaw outlines in "Demarginalizing." The experiences of women may seem universal, but that does not mean the remedy will be the same. SlutWalk misses the point[5] for how to include other identities in ways outside of reclamation. At the end of the blog, Cooper mentions a movement called Stop Street Harassment that is addressing the issues of safety for women in schools and on the streets through a multiracial lens, "[recognizing] that challenges to that safety while similar in some respects, can differ across race and class" (p. 50). With thought and intention, it is possible to address issues of sexual violence that pays respect to intersectional identities of all the women who experience it. Once again, Cooper has taken a point of cultural significance at the time that allows for people to better understand intersectionality.

Cooper's engagement and the Crunk Feminist Collective are working to promote the ideas of intersectionality throughout the mass public. Not only do the two examples outlined show that the author has a clear grasp on intersectionality, but Cooper also makes note to mention Kimberlé Crenshaw when she is explicitly discussing intersectionality as well. While certain individuals may choose to engage with the Crunk Feminist Collective's blog or pick up their book in a library, anyone can engage with the content, whether positively or negatively, and understand more about intersectionality.

Strike a Pose, Let's Vogue: Intersectionality in Magazines

> "They were already having conversations on Tumblr and on social media around intersectional feminism and racism and reproductive rights and gender fluidity — all these conversations were happening in the margins, but there was no mainstream media platform that created an intersection [where] all of those aspects of their identities could be celebrated."
>
> -Elaine Welteroth, Editor-in-Chief of Teen Vogue, 2016-18

Magazines provide another aspect of digital media that shows how intersectionality moved from the academic to the general public. One prominent example of this shift is Teen Vogue. It will serve as the focus of my analysis.

A 2017 New York Times article entitled "Refashionista" was a profile on the youngest and second-Black female editor of *Teen Vogue* magazine, Elaine Welteroth. Welteroth was only 29 years old when she became the editor of *Teen Vogue*. The article, written by Jazmine Hughes, details the way Welteroth worked her way up in the communications world, unafraid to detail experiences of Black culture that were so commonly missing from the fashion-centered views of magazines. Hughes describes the audiences for the largest magazines of her time: "...CosmoGirl (for sassy white girls), Seventeen (for ambitious white girls), YM (for white girls prone to toxic shock syndrome). *Teen Vogue*—for rich white girls. .." (para. 4). Growing up, Welteroth didn't read these magazines, as she preferred publications like *Ebony* and *Essence* that always feature Black women. Throughout her education, interning, and eventual days in the workforce, Welteroth always seized opportunities to add the views and lived experiences of people of color to the white homogeneity of the magazine world.

With the rise of social media, teen magazines, along with many paper-based aspects of life, were already facing obstacles as they tried to compete with digital platforms. Gone were the days of receiving a magazine in the mail as digital newsletters took over. As one of the two teen magazines left producing paper issues, *Teen Vogue* needed to shift to something more than just beauty and fashion to compete for its readership. Following the 2016 Presidential Election, Welteroth saw an opportunity and deep desire from readers to include more socially conscious material. The election of Donald J. Trump over Hillary Clinton thrust a spotlight on the many issues, such as sexism and racism, that continued to impact the United States.

The shift pre- and post-Trump in *Teen Vogue* was drastic, yet successful. Young Americans were passionate about developing as a whole person. No longer did readers only care about what the it-color of the season was, but they also cared about what issues were on the ballot and the importance of theories, such as intersectionality, meant for marginalized individuals.

Teen Vogue ran its first print issue in 2002, with its digital presence beginning in 2003. Through a primary search on *Teen Vogue's* website, the earliest mention of "intersectionality" was in 2015[6], the same year that Phillip Picardi was named the digital editor of *Teen Vogue*.[7] This is important to note because Picardi would work closely with Welteroth and Marie Suter, the sitting creative director of *Teen Vogue*. The three are known to be the triumvirate that revolutionized Teen Vogue to the politically conscious platform that it is today (Hickbottom, 2022).

Keyword	Number of Results	Earliest Mention	Latest Mention
"Intersectionality"	151	7/23/2015	11/15/2024
"Intersectional"	286	8/26/2015	10/24/2024
"Kimberlé Crenshaw"	31	10/19/2016	11/15/2024

Fig. 4 | *Teen Vogue* use of keywords. Created by the author.

Research done on the "Voices" section of *Teen Vogue* magazine in 2017, its final year in print, shows that a magazine can be a site of "intersectional feminism" (Crookston & Klonowski, 2021, p. 37). *Teen Vogue* deems its shift as a response to "a generation that demands substance," re-emphasizing that teens don't only look in fashion magazines for tips on how to look good or have better sex (p. 39). What is even more notable about *Teen Vogue's* shift from print and digital issues to a digital publication is that more and more people visited their website in 2018, the year they went solely online. In the late 2010s, *Condé Nast*, parent company of *Teen Vogue*, reported that 8.7 million people engaged with the digital publication, and 13.6 million followed *Teen Vogue's* various social media accounts (Crookston & Klonowski, 2021, p. 39). I conducted my own research on the articles of *Teen Vogue's* website, which are listed in Figure 4.

The earliest mention of intersectionality that I located on *Teen Vogue's* website was in an article entitled "How Taylor Swift's Apology to Nicki Minaj Makes an Important Statement" by Casey Lewis (2015), a Senior Editor. Lewis puts intersectionality, albeit briefly, in discussion with pop culture. Nicki Minaj released two music videos that year, including "Anaconda," which shattered the record for most views in 24 hours, and "Feeling Myself" which featured Beyoncé, one of the most important musicians and entertainers of the 21st century. Neither video received nominations for the 2015 Video of the Year award. Because of her "double snub" nomination from the Video of the Year category, Minaj took to Twitter, expressing her anger. Taylor Swift, whose music video "Bad Blood" was nominated and would later win Video of the Year, took Minaj's commentary as a personal attack and not as commentary on the flaws of the music industry. Lewis explains this misunderstanding, a common occurrence in the digital world, but also uses the cultural moment as a touchstone for discussion surrounding larger issues at play, writing:

> How many times have you wrongly interpreted a text, or read the grin emoji as a straight-up grimace? But white privilege (defined as societal privileges that benefit white people) is a very real thing, and so is white feminism (i.e. feminism that ignores intersectionality – how oppressive institutions, like racism and sexism, overlap and can't be examined separately). (para. 5)

Once again, similar tactics used by Cooper of the Crunk Feminist Collective are implemented by Lewis in their article. Intersectionality, which may seem complex and convoluted, is related to pop culture, creating an accessible example. Even without prior knowledge of the Minaj/Swift interaction, readers can easily pick up and begin to understand this theory.

The article outlined above, along with the many others published between 2015 and the present, proves that *Teen Vogue* is another site of intersectionality's move from the academic to the public. *Teen Vogue's* continued publication of articles dealing with intersectionality also show that it was received in a largely positive way by its readers over time. *Teen Vogue's* movement, however, has a marked difference from the platform set up by the Crunk Feminist Collective. The Crunk Feminists sought to create space for women of color to engage with one another, both the individuals who wrote the different blogs, along with viewers, who would engage via the comments section. *Teen Vogue* sought to create space for learning about a variety of socially conscious topics like intersectionality for the sake of educating their masses and keeping up with the times. This is understandable, as *Teen Vogue* has a different agenda as a business—to keep and expand their readership—whereas the Crunk Feminist Collective is not a corporation. Despite this, both digital spaces show that the academic has moved to the public, helping spread intersectionality to the masses.

#IntersectionalityMatters: Crenshaw's Continued Influence

While my research has outlined the efforts of many individuals, collective, and organizations that have helped move Crenshaw's theory into the public, it is imperative to understand that Kimberlé Crenshaw has also played a significant role in the movement of her theory from the academic to the public. Kanani (2020) states, "the widespread travel of concepts may resemble trafficking and plagiarism, divorced from their social contexts of emergence and the people who have theorized them" (p. 522). Although some of this "loss of context" has been the case for intersectionality, Crenshaw has worked to make this not the case. Below is a Google Ngram of Kimberlé Crenshaw's name.[8]

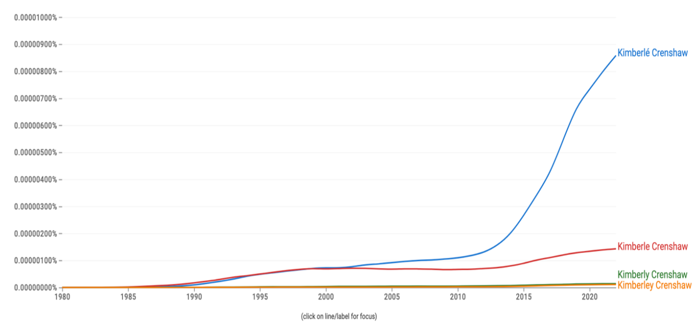

Fig. 5 | Google Ngram of "Kimberlé Crenshaw" and alternative spellings, 1980-2025. Captured by the author.

Crenshaw's name takes off about twenty years before terms like "intersectionality" and "intersectional" start to see a spike in search terms. In 1990, Crenshaw was one of the lawyers representing Anita Hill and her nationally televised testimony at the Senate confirmation hearing for Clarence Thomas (Carrie Chapman Catt Center, para. 4). In the mid-1990s, Crenshaw started the aforementioned African American Policy Forum, "an innovative think tank that connects academics, activists and policy-makers to promote efforts to dismantle structural inequality" (AAPF, para. 1). The second spike in 2014 is after the #SayHerName initiative was started by the African American Policy Forum in response to the Black Lives Matter movement and the frequent centering of Black men who are killed by police violence over Black women.[9] Crenshaw's presence in the media continues to rise, as she is a public speaker. She is often interviewed by a variety of media sources about her theory.

All of Crenshaw's work—her work on the Anita Hill and Clarence Thomas hearings, the mission of the African American Policy Forum and its largest initiative to-date, #SayHerName, and her continued contributions through legal and academic publications—continues to strive for what she originally outlined in her legal review publications in the public eye. Her TedTalk, "The Urgency of Intersectionality," filmed in October 2016 has amassed 6.7 million views across TED social media platforms. As she continues to rise, so does intersectionality alongside her.

While the African American Policy Forum champions several platforms with #SayHerName, such as #TruthBeTold, a campaign against censorship and banned books, my research focuses on Crenshaw's podcast, *#IntersectionalityMatters*. Since the first episode of *#IntersectionalityMatters* in 2018, Crenshaw has tried to help listeners understand their own lives in "deeper, more nuanced ways" (43:35). The podcast brings intersectionality to life by exploring today's most pressing issues. In what Crenshaw calls an "idea travel log," she lifts up the work of leading activists, artists, and scholars and has created a platform for people like herself who are working to bring intersectionality into the public eye.

In her two law review articles "Mapping the Margins" and "Demarginalizing the Intersection," Crenshaw writes in a way that someone with no legal expertise, but a working knowledge of American racial politics could understand. Both of her legal theory articles could be understood by someone who doesn't have a legal theory background. Easily digestible topics, through the use of personal anecdotes and her integration of real-life cases, work to break down this complex theory. Through the use of excerpts and her public speaking appearances, Crenshaw continues to widen the original scope of her law review articles.

Crenshaw tries to apply this concept to everyday life in the United States because it is something that people experience in their everyday lives. In her law review article, she is applying a legal lens, arguing that the law needs to begin understanding that women of color should not be subject to only racial or gender scrutiny because their existence—and therefore their experiences—more often than not are defined somewhere in the intersection of these two realities. Through her podcast, she is doing so much more, framing intersectionality as a problem that impacts everyone; in a way it does, albeit in indirect and direct ways.

In one of the first episodes called, "Defending the C.R.O.W.N.: Life, Liberty and the Pursuit of Nappyness," a Black woman news anchor named Brittany Noble shares her story about how she was fired from her job because of her hair. Tracee Ellis Ross is also on the show, explaining her hair care brand Pattern Beauty and how she came to love her natural hair, and engaging in a larger dialogue with Crenshaw and Noble about Black women's hair. If a Black woman were to hear this podcast, they could relate to the topic of a "hair journey" more than anyone else. All three women work through their lived experiences, both funny yet angsty, evoking emotions and reactions that are quite relatable. Most people can relate to a "bad hair day" in some way, shape, form, or fashion, even though the podcast frames it in a solely Black female experience.

In a similar fashion, states around the country have begun to pass the Creating a Respectful and Open World for Natural Hair (C.R.O.W.N.) Act, which prohibits racially based discrimination towards someone's hair.[10] While this act mainly focuses on the lived experiences of Black women, as many of the hairstyles included in the language are bantu knots, braids, locs, and twists, the prohibition of hair discrimination indirectly allows for a more inclusive hair experience for all employees, no matter their race. By advocating for a better understanding of hair politics for Black women, there has been more acceptance for other individuals as well to wear their hair in ways that they feel comfortable with. Despite this progress, there is still more to go, not only in hair discrimination, but for the understanding and application of intersectionality.

The Present State and Debate of Intersectionality

In a *Vox* article published in 2019, Jane Coaston interviewed Kimberlé Crenshaw, as well as a number of American conservatives, to paint the reality of what people think intersectionality means across the American landscape. Coaston sums up the debate in the following way:

> The current debate over intersectionality is really three debates: one based on what academics like Crenshaw actually mean by the term, one based on how activists seeking to eliminate disparities between groups have interpreted the term, and a third on how some conservatives are responding to its use by those activists. (para. 9)

The first aspect of this debate was explored in the initial sections of my research, exploring Crenshaw's role in framing intersectionality within the legal realm and moving it into the public sphere through her podcast, *#IntersectionalityMatters*. The second aspect of the debate was also briefly explored in my literature review. There are a number of individuals who don't quite understand what intersectionality is, sometimes confusing the term with diversity. The movement of intersectionality from the academic to the public inevitably created some discrepancies, as it exchanged one sphere to another. Thankfully, many activists and organizations, such as the Crunk Feminist Collective and the writers at *Teen Vogue*, are all examples of how accurate descriptions of intersectionality are being presented in the digital sphere. They are also all examples of how using online digital media and cultural indicators worked to move intersectionality to a larger audience.

The final aspect of this debate was not explored in depth in my paper but speaks to why the idea is an important issue to continue exploring. The *Vox* article includes the perspectives of some conservatives, who dive into their issues with intersectionality. Most conservatives do not have an issue understanding the theory itself—which echoes again the success of this theory in being understood by a wider audience—although it does not corroborate my argument about its movement in online digital media per se. The conservative issue with intersectionality lies within the effects of intersectionality. If the courts were to create a system where individuals with marginalized identities are given recognition, some conservatives see the results as an attack. In their viewpoint, in such a system, someone with no marginalized identity, for example, a middle-class heterosexual white man, will become the victim.

As a result, much of their rhetoric surrounding "intersectionality" is about their potential for shifting victimhood. While people are being called out on their missteps, as Cooper does in her articles about SlutWalks and My Brother's Keeper, for the *Teen Vogue* article about Taylor Swift, and even Crenshaw's discourse about the news anchor's boss who perpetrated hair discrimination, the desire is not to make the oppressors the victims. In fact, emphasizing these activists' decisions to speak, read, and write about the transgressions of those who perpetrate prejudices is all in an effort to highlight instances of a systemic issue that needs to be eradicated. Black feminists', *Teen Vogue's*, and Kimberlé Crenshaw's efforts are important now more than ever, as the political right continues to twist the narrative of intersectionality. As changes in the American government erase intersectionality, critical race theory, and even initiatives for diversity in schools, it is becoming more and more important for online digital media platforms to remain places of discussion.

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Author Footnotes

[1]I include the term "intersectional" in my research for two reasons. First, some people discuss "intersectionality" by emphasizing taking an intersectional approach to something. Also, "intersectional" in some search engines, is a better term because it will capture both instances of "intersectionality" and "intersectional" in results.

[2]For the purpose of this paper and to combat what is believed to be inaccurate documentation and a resulting racialized depiction of Sojourner Truth, I refer to her speech as "Aren't I a Woman" instead of the more widely known "Ain't I a Woman?" To learn more about this history, see Painter, Nell Irvin. Sojourner Truth: A Life, a Symbol. W.W. Norton, 1996.

[3]As of September 27th, 2024, California became the first state to pass a law that would take into account intersectional identities as recognized by the law. SB 1137 calls for amendments to law in discrimination in the workplace, schools, housing, and businesses and companies. This bill is projected to be enacted on January 1st, 2025. Although SB 1137 will not change the lives of Californians overnight, this is a significant first step that addresses the ideas that Kimberly Crenshaw first explored in her papers 35 years ago. The foundation to fill the gap has begun to be poured not only for Black women, but for all people who may find themselves at the intersection of multiple marginalized identities.

[4]See more: Pappoe, Yvette N. "The Shortcomings of Title VII for the Black Female Plaintiff." University of Pennsylvania Journal of Law and Social Change 20, 1 (2019): 1-23.

[5]See article: Crunktastic. "I Saw the Sign but Did We Really Need a Sign?: Slutwalk and Racism." crunkfeministcollective.com, October 6, 2011. https://www.crunkfeministcollective.com/2011/10/06/i-saw-the-sign-but-did-we-really-need-a-sign-slutwalk-and-racism/

[6]While 2015 makes sense in this context as the earliest mention of "intersectionality" because of who was in charge at the time, Teen Vogue does not have a fully comprehensive digital or physical archive that clearly includes or dates back to its early 2000s origins. It is possible there are earlier mentions, but limited resources don't allow for me to easily access this history.

[7]Date retrieved from personal LinkedIn page: https://www.linkedin.com/in/pfpicardi/details/experience

[8]I chose to include her name without the "é" because of the uniqueness of her first name. If someone hears her name in an auditory context, there could be several ways of spelling Crenshaw's first name, hence the more common spellings of Kimberlé represented on the graph.

[9]It is important to note that this is not a result of the founders of the movement, 3 Black women, desiring to center Black male experiences over Black women. All three of the founders of the Black Lives Matter Movement: Alicia Garza, Patrisse Cullors, and Opal Tometi, have spoken about their desires for intersectionality in #BlackLivesMatter. See article: Cobb, Jelani. "The Matter of Black Lives." The New Yorker, March 6, 2016.

[10]At the time of my completion of research in January 2025, the C.R.O.W.N. Act is only legal in a little more than half the states across the United States. It is not recognized by the federal government either despite its passage in the House of Representatives in 2022.

ORIGINAL RESEARCH

Cripping Literature through Reparative Reading: Gender, Disability, and the Case for Symbiosis

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Readers and literary critics alike have begun incorporating the lessons of disability studies into their textual approaches. This article argues that the disability studies field would benefit equally from adopting the reparative reading practices of literary theorists like Eve Kosofsky Sedgwick and Heather Love. Drawing on these scholars' works, this article utilizes a dual reparative and paranoid approach while exploring intersectional impacts of gender and disability on character portrayal in nineteenth century novels *Jane Eyre* and *Olive*. Subsequent analysis highlights ways in which disability ruptures traditional gender expectations and demonstrates how bodies are pressured into compulsory able-bodiedness and heterosexuality. Simultaneously, this article celebrates ways in which these novels champion joyful futures for disabled individuals and portray disabled characters as strong, attractive, and multi-faceted, reinforcing the importance of reparative reading.

In the mid-2020s, it requires significant mental energy to recall a world not yet consumed by so-called cancel culture. This controversial practice — which I define as the societal impulse to shun or boycott individuals, entities, or media deemed offensive — is of particular interest to me when it comes to canonical literature. Aware of the damage that inauthentic, stereotypical representations can inflict, readers are perhaps more likely than ever to confine problematic depictions to the proverbial waste basket.

However, over a decade before this concept captured the cultural zeitgeist, there existed the framework of "paranoid reading." Coined by gender studies and queer theory scholar Eve Kosofsky Sedgwick (2003), this term encapsulates the practice of reading works with a fine-tooth comb in pursuit of conspiracy or discrimination. Such an objective suspends the reader in futurity, waiting for the inevitable shoe to drop; as Sedgwick clarifies, "No time could be too early for one's having-already-known [...] And no loss could be too far in the future to need to be preemptively discounted" (p. 131). For instance, a reader of *Harry Potter* aware of the author's trans-exclusionary "feminist" ideology may scour the bespectacled boy-wizard's tale for hints of transphobia. With misinformation canonized and marginalized voices lost beneath layers of authorial bigotry, paranoid projects are crucial to authentic storytelling.

Yet, alongside the paranoid, Sedgwick offers the twin approach of *reparative* reading: to simply enjoy a piece for pleasure and insight, not on the lookout for offensiveness. In practice, this might manifest as delighting in the tale of the boy who lived; appreciating textual messages of love and friendship; and debating which Hogwarts house one would be assigned to if genetically lucky enough to gain entry to the school of magic.

Specifically, while analyzing works depicting disability, scholars in the field seem to skew toward the paranoid. In his book *Aesthetic Nervousness* (2007), Ato Quayson prefaces literary analysis with the typification of literary tropes surrounding disability, such as "disability as the interface with otherness" and "disability as bearer of moral deficit/evil" (p. 52). By doing so, though he helpfully encourages critical appraisal of damaging literary tendencies, he also *stereotypes* stereotypes themselves, categorizing tales into neat, negatively-connotated buckets. In their book *Narrative Prosthesis* (2000), David Mitchell and Sharon Snyder define their titular term as, among other things, "[their] way of situating a discussion about disability within a literary domain while keeping watch on its social context" (p. 9). The authors' language is strikingly suggestive of a paranoid, watchdog-esque approach, wary of societal repercussions of problematic portrayals. Though the authors do not binarily deem works "positive" or "negative" depictions of disability, their readings still tilt toward blanket approval or disapproval; apparently, the literature they consider either makes a nuanced commentary or simply reifies damaging stereotypes. Finally, in the 2020 documentary *Code of the Freaks*, while discussing problematic choices in 2009's Avatar, Susan Nussbaum asserts that the film "'didn't escape my […] piercing gaze. And I think more people need to have piercing gazes when they're watching movies of any kind, but certainly movies with disabled characters'" (Chasnoff, 2020, 58:29). Again, language tethered to the act of watching suggests an audience constantly on edge and on guard.

This tendency toward paranoia is deeply understandable. Villainous and pity-saturated portrayals of disabled characters from Captain Hook to Tiny Tim litter the Western literary canon. Criticism of problematic or painful characterization is, undoubtedly, a necessary means of advocacy for the disabled community. However, when taken to the extreme, paranoia-prompted pushback may lead to the dismissal — our outright "cancellation" — of all ableist representations. Indeed, a series of disability advocates and academics interviewed in *Code of the Freaks* cannot name a single film featuring a disabled character that they enjoyed (1:02:50).

Such renunciation may seem beneficial; after all, why should a community long-plagued by discrimination confront problematic works in the present day, especially with a much-needed, burgeoning media focus on disabled joy and power?

Heather Love offers relevant insight in reply. Her work revolves around the LGBTQ+ community which, analogously, has popularly resisted pre-Stonewall media in favor of a gay pride mentality. In her book *Feeling Backward* (2007), she argues that the Queer canon would be remiss to exclude damaging or insensitive media. "As long as homophobia continues to structure our public and private lives and books [about Queer suffering] continue to be so eerily familiar," she argues, "we cannot do without an analysis of the intimate effects of homophobia." Love asserts that such analysis is essential because "without it we cannot remember history's failures, or do justice to our own experience in the present. Celebration will only get us so far, for pride itself can be toxic when it is sealed off from the shame that nurtured it" (p. 127). Love warns that eschewing problematic, painful depictions of a marginalized community may cause members to lose touch with their history, a past which has inevitably shaped their present. Therefore, while ableism in literature — as in all spaces and forms — should be condemned, I argue that it should also be contextualized and considered in relation to the disabled community today. And necessary critiques need not negate coexisting enjoyability of multi-faceted media. Returning to Sedgwick's work, I suggest that paranoid and reparative readings can be performed *simultaneously* to regard literature of disability with the complexity and historicity it deserves.

Indeed, "historicity" is a crucial consideration, for if paranoid reading is rooted in the future, what does this mean for the past and present, particularly regarding texts written decades ago? By reading reparatively, we create space for these temporal zones. The practice's encouragement of readerly surprise and enjoyment mandates an embodied reading experience anchored in the present. Meanwhile, reparative reading's embrace of a piece's pure intentions or positive reinterpretation requires knowledge of its predecessors and cultural context, drawing in the past. To generate as nuanced a reading as possible, then, it is beneficial to read with both of Sedgwick's methods in mind.

I look toward Love and Sedgwick's examples as I investigate an intersectional interest in the realm of literary disability studies: how disability and gender intertwine to uniquely code disabled bodies branded male or female.[1] Rosemarie Garland-Thomson's "Integrating Disability, Transforming Feminist Theory" (2007) highlights the necessity and mutual benefit of merging feminist and disability scholarship. These siloed fields, she argues, are interested in numerous overlapping issues, from bodily policing to patriarchal medical control and media representation. The experience of a disabled woman is fundamentally different from that of a nondisabled woman or a disabled man, impacted by the combined coding of femininity and disability. Likewise, the nebulous entity that is masculinity maps onto the disabled body in unique ways. Thomas Gerschick and Adam Miller explore this notion in their article "Coming to Terms: Masculinity and Physical Disability" (1995). After conducting interviews, Gerschick and Miller concluded that their disabled, male subjects responded to their non-conforming bodies by utilizing one of three frameworks: reformulation (reconceptualizing hegemonic masculine ideals), reliance (dependence upon dominant hegemonic masculinity), and rejection (separation from dominant masculinities and the creation of alternatives). They note that characteristics commonly associated with men are at odds with those affixed to disabled bodies: independence, sexual prowess, and strength conflict with the dependence, impotence, and weakness often associated with disabled people. Men must therefore renegotiate their relationship with dominant hegemonic masculinity to come to terms with their disabled selves.

Bringing masculinity, femininity, and disability together, disability writer and activist Eli Clare emphasizes that "To be female and disabled is to be seen as not quite a woman; to be male and disabled, as not quite a man." How did these beliefs originate? Clare convincingly argues that they are an inevitable byproduct of gender's predication on non-disabled status: "The mannerisms that help define gender—the ways in which people walk, swing their hips, […] take up space with their bodies—are all based on how nondisabled people move," he says (2009, p. 130). By these prejudiced standards, then, disabled individuals are destined to fail at "proper" gender performance.

Based on the notion that disability and gender are inseparable — and reinforcing critical race theory scholar Kimberlé Crenshaw's eye-opening call for intersectionality in the early 90s — I consider the textual interplay of both identity facets while analyzing two mid-nineteenth century texts: Charlotte Brontë's *Jane Eyre* (1847) and Dinah Mulock Craik's *Olive* (1850). While close-reading Brontë's novel, I consider the depiction of Edward Rochester and his disabled masculinity. I then pivot to Mulock Craik's lesser-known *Olive*, whose eponymous protagonist highlights how disabled women were regarded differently than their male counterparts.

In unpacking these texts, I enumerate well-documented ways in which gendered stereotypes have historically punished disabled bodies. However, I offer a novel layer of insight in suggesting that, by reading these works with a dual paranoid and reparative approach, we may be motivated to think differently about these intersectional identities and the literature that contains them. Equipped with the lessons of Love and Sedgwick, I look to these texts not only as sites of critique, but as meaningful ways by which to understand the history and present-day circumstances of disabled and gendered populations. Indeed, *Jane Eyre* and *Olive* demonstrate that works written nearly a century ago can still contain content that empowers and excites, even as it demands conversation and critique. By incorporating both paranoid and reparative textual interpretations, I encourage a nuanced view of not only this literature, but the past, present, and future of what is now the disabled community; I demonstrate that just as the teachings of disability studies have benefitted literary analysis, the lessons of literary theory can equally benefit critical approaches to the literature of disability.

Jane Eyre: Shame, Defiance, and Contrived Compatibility

Brontë's bildungsroman chronicles the maturation of the titular heroine Jane Eyre. As a young woman, Jane is employed by the proud and wealthy Edward Rochester, who is introduced as a domineering, stubborn, and nondisabled man. The pair eventually stumble into a fraught, yet passionate romance. After a traumatic incident involving his estranged wife, Rochester becomes blind

and an amputee. The subsequent shift in his persona — and its implications for his marriageability — reveals much about the social stigma that surrounded disability.

After a period of separation, Jane returns to a newly disabled Rochester, finding the formerly proud man awash in self-pity. He is described as "desperate and brooding," "dangerous to approach in his sullen woe" (Brontë, 1847, p. 384). Although Jane assures him that she is not repelled by his blindness, Rochester remains skeptical: "'Jane, you have now, no doubt, friends who will look after you, and not suffer you to devote yourself to a blind lameter like me?'" he inquires (p. 387). Rochester's question is a leading one, implying that it would be foolish and burdensome to wed oneself to a disabled person. Later, Rochester cries, "'If I were what I once was, I would try to make you care—but—a sightless block!'" (p. 388). Here, Rochester distinguishes between his pre- and post-disability self, intimating that his lovability vanished with the onset of his blindness. In claiming to be a "block," he likens himself to an entity not only devoid of mobility and sight, but personality, sexuality, and life. Rochester views his *humanity* as compromised by his injury, revealing the extent of his internalized ableism.

While Rochester feels like less of a man due to his blindness, English and disability studies professor Julia Miele Rodas argues that his amputated arm may, by contrast, reinforce his masculinity. "'What if [...] Rochester's disability is a beautiful thing within the Jane-Rochester sexual aesthetic, his stump manifestly, unapologetically erect, phallic, masculine?'" she questions (Rodas as cited in Stoddard Holmes, 2013, p. 163). Yet a rereading of this scene suggests that Rochester is hardly unapologetic. Rather, he is depressed and horrified as he presents his amputated arm. This presentation occurs after Jane remarks upon his disheveled appearance: "'It is time some one undertook to rehumanize you'" she says, observing the state of his overgrown nails (Brontë, 1847, p. 388). In reply, Rochester admits, "'On this arm I have neither hand nor nails,' [...] drawing the mutilated limb from his breast [...] 'It is a mere stump—a ghastly sight! Don't you think so, Jane?'" (p. 388). While Jane's comment is in jest, its somber undertones are not lost on the reader, nor Rochester; his disability has coded him as less-than-human. The revelation that he lost his hand reads as a shameful confession, forcing him to display the stump once protectively cradled to his chest. Looking upon such a "ghastly sight" sends him back into lamentation. Indeed, he wonders if Jane, too, is repulsed by his form and disinterested in further romantic entanglement. Again, Rochester is self-critical, despairing, and insecure, his romantic capacity — and phallic capability — questioned rather than asserted. I am thus more inclined to accept David Bolt's reading of the amputated arm and blindness as "symbolic castrations," diminishing Rochester's perceived normativity and sexual ability (Bolt, 2013, p. 39).

English professor Margaret Rose Torrell agrees with Bolt, recalling a pre-disability description of Rochester as "hard and tough as an India-rubber ball" which contrasts with the vulnerable flesh of Rochester's disabled body (Brontë as cited in Torrell, 2013, p. 71). Clarifying why such a change would prompt devastation, Susan Bordo explains the unrealistic view of male sexuality generated by the penis' mythical counterpart: the phallus. Bordo argues that the phallus is "a creature of the cultural imagination, not biology" (Bordo, 1999, p. 104). Unlike the anatomical construct of the penis, it is artificial, eternally hard, erect, and powerful. As a result, the phallus "haunts the penis," ensuring that the fallible sex organs of cisgender men will never "measure up [to its] heroic unflinching constancy" (p. 86). Bordo thus exposes the precarity of manhood, tied to an impossible ideal. This juxtaposition between the hard, hyper-masculine phallus and the fallible, fleshy penis is eerily applicable to Rochester's transformation from "hard and tough" to soft and vulnerable.

Yet, counterintuitively, Rochester's transformation is a source of *relief* to Jane, whose reaction to Rochester is equally telling as to how disability was then understood. After describing a sullen, brooding Rochester, Jane inquires, "And, reader, do you think I feared him in his blind ferocity?" only to reject this notion and claim that, instead, "A soft hope blent with my sorrow that soon I should dare to drop a kiss on that brow of rock" (Brontë, 1847, p. 384). Interestingly, despite my previous claim regarding Rochester's hardness giving way, Jane describes his brow as rock-like. Although Rochester believes his manhood has been eroded, Jane still views him as masculine and phallic. This may seem to challenge a view of disability as inherently desexing its subject. However, this reading is undermined by the source of Jane's "hope." Jane's optimism is contextualized by her former sense of subservience to Rochester; uncomfortable with his domineering ways in addition to his literal and social capital, Jane worries throughout the novel that she will be overshadowed by her potential partner. Thus, the discovery that he has become a blind amputee is a source of excitement to Jane. She believes that his resulting "reduced" state will facilitate an egalitarian relationship.

This perspective is not novel. Countless scholars have endorsed the "longstanding critical argument that Brontë uses disability symbolically as the only way to level Rochester's power and enable her vision of egalitarian marriage" (Stoddard Holmes, 2013, p. 154). Helene Moglen, for instance, "sees [Rochester's] injuries as the necessary complement to Jane's independence, 'the terrible condition of a relationship of equality'" (Moglen as cited in Stoddard Holmes, p. 162). Meanwhile, Sandra Gilbert and Susan Gubar, authors of the foundational work The Madwoman in the Attic: The Woman Writer and the Nineteenth-Century Literary Imagination, opine that "'now, being equals, he and Jane can afford to depend upon each other with no fear of one exploiting the other'" (Gilbert and Gubar as cited in Stoddard Holmes, p.162). It is perceived equality, then, that enables the pair to unite. Therefore, when Rochester questions Jane's desire to marry him despite his "deficiencies," Jane replies, "'I love you better now, when I can really be useful to you, than I did in your state of proud independence'" (Brontë, 1847, p. 396). Moglen's and Gilbert and Gubar's readings of the couple as equalized are thus reinforced.

However, this interpretation requires additional critical commentary. Martha Stoddard Holmes provides just that, noting, "What is problematic about this [interpretation] is that it reads disability as purely symbolic" (Stoddard Holmes, 2013, p.162). Indeed, disability seems a mere plot device in *Eyre*, a tossed-in ingredient to level the pair's social playing field. As a woman in a patriarchal society, Jane's financial dependence and social subservience bar her from an equitable union. Yet Jane suddenly receives a family fortune, and Rochester is "punished" for his controlling nature with disability, allowing this inequity to disappear. As Chih-Ping Chen claims, "Gender inequality and social marginality faced by a woman are 'corrected' only by the reversal of the gendered roles of the host and the exhibit" (Chen as cited in Torrell, 2013). In thus assuming that injury diminishes Rochester's social standing, *Jane Eyre* reflects a then-common view of disability as a symbol of weakness that places a man on the same level as a socially inferior woman, even as it champions a radically egalitarian marriage for the time period.

By contrast, English and disability studies professor Essaka Joshua interprets *Eyre* as linking disability to *strength*. She affirms that the novel's repositioning of Biblical allusions posits disability as not only acceptable, but *sacred*, a pathway to religious salvation. The novel achieves this by "associating passages that admit of a redemptionist reading with characters who show their spiritual worth" (Joshua, 2013, p. 127). Joshua asserts that "When the sighted Edward is on what the novel deems to be the wrong religious path, he is associated with the foibles of the sighted Samson; when he has experienced his religious conversion, he is the blind man who spiritually sees" (p. 127). For this reason, Joshua believes that readings of Edward's injuries as punishment for his past behaviors are unsupported. Instead, she considers these wounds to be manifestations of his moral reform. Certainly, there are legitimate critiques to be made of this reading, as Christianity and disability have had a tenuous relationship. That said, the radical re-envisioning of *Eyre* as *celebrating* physical difference is impactful, particularly in how — assuming this was, in fact, her intention — Brontë went so far as to subvert Biblical narratives to paint a more favorable portrait of disability.

Likewise, it is worth acknowledging that a disabled character who is loved no less — and in fact, *more* because of his disability — is a rare occurrence in nineteenth-century literature. Historian Ernest Freeberg explains that although, "by one estimate, there were as many as eight thousand blind people in America in the 1830s [...] the blind were invisible, hidden from view. Wealthier families usually kept their blind relatives confined to back rooms and kitchen corners" (2002, p. 121). This changed in the early 1830s with the advent of schools for the blind and demonstrations of blind individuals' capacity for knowledge and rewarding lives. This capacity is illustrated in *Jane Eyre*; at the end of the novel, Rochester marries Jane and fathers a child. That a depiction of a fulfilled and happy blind man was published a mere decade after views of this group began to change is significant. Rochester powerfully partakes in normative milestones despite an injury that, in years past, would have barred him from such a future.

However, by reaching toward normativity, *Eyre* further complicates its portrait of impairment. Strikingly, Rochester's blindness disappears after his marriage to Jane. He "eventually recover[s] the sight of [...] one eye," enabling him to "find his way without being led by the hand" (Brontë, 1847, p. 402). Despite Joshua's claims, it seems as though Rochester has been "rewarded" with sight and independence in recognition of his egalitarian relationship. In addition to perpetuating notions of nondisabled superiority, this also invokes a common trope: the healing power of heterosexuality. Robert McRuer, the father of crip theory (a field that draws from disability studies and queer theory), unpacks this cliche, claiming that, for many characters, "able-bodied status is achieved in direct proportion to [...] increasing awareness of, and need for, (heterosexual) romance" (2006, p. 24). Disability is often symbolically linked to immorality, and, indeed, this is the case for the formerly domineering Rochester, "punished" with impairment. Yet submitting to heterosexual desire purifies the disabled soul. By uniting with Jane and ceding his power, Rochester has been an exemplary enough heterosexual to be "rewarded" with physical "normalcy." Thus, Rochester's trajectory is multi-faceted: It easily lends itself to a paranoid reading, showcasing a hierarchy of normalcy that disadvantages deviant forms, disabled and heterosexually-unfulfilled alike. Simultaneously, it reaches toward the reparative, engineering then-radical gender equality and a joy-filled future for a disabled individual. Both readings are essential to extracting the fullness and complexity that *Jane Eyre* has to offer.

Olive: From Pity to Agency

Olive Rothesay is the rare disabled *protagonist* — not sidekick or background character — who, unlike Rochester, is congenitally impaired. Also a bildungsroman, Olive's tale traces the heroine's development from birth into young adulthood. Though her disability is posited as pitiable, it is never a barrier to a life of joy and meaning for this three-dimensional character.

Soon after she enters the world, Olive's doctor discovers a slight curvature of her tiny spine and pronounces her deformed. Elspie, the nurse who had previously rocked Olive tenderly, suddenly "wore a look almost of repugnance as she regarded the unconscious child, and then that very unconsciousness seemed to awaken her womanly compassion" (Mulock Craik, 1905, p. 10). Elspie's disgust articulates her unsavory feelings toward disability. It is only Olive's infancy and perceived innocence that stirs the nurse's empathy. After all, as Joseph Shapiro notes, "Disability was barely tolerable — and only to be pitied — when it struck cute and innocent children. It was unmentionable in adults" (Shapiro, 1993, p. 15). Compassion consuming her, Elspie whispers, "'Puir hapless wean [...] Lack of kinsman's love, and lack o' siller, and lack o' beauty. God forgive me—but why did He send ye into the awful' warld a a'?'" (Mulock Craik, 1905, p. 10). Simultaneously, Elspie invokes pity discourse by deeming Olive "puir" (poor), desexes her, conflates disability with ugliness, and questions the child's right to exist. This disparaging perspective is not unique to the nurse. The tale's omniscient narrator says of Elspie's inquiry to God, "It was a question, the nature of which has perplexed theologians, philosophers, and metaphysicians in every age, and will perplex them all to the end of time" (pp. 10-11). That supposedly wise individuals across disciplines ponder disabled individuals' reason for existence conveys the ubiquity of this attitude, one that casts disabled bodies as so inferior that their right to life is questioned. Thus, from her very first day of life, Olive is subjected to discrimination and pity.

Olive continues to be the subject of pity discourse throughout much of the story, a perspective perpetuated by its narrator. Lamentations of Olive's bad fortune become a textual refrain, engaging the reader's emotions each time she is discriminated against because of her appearance. This becomes challenging to unpack for modern-day audiences. Certainly, being disregarded and disrespected is cause for empathy. Yet the narration seems to beg a sadness that Olive is disabled in the first place, reflecting the societal stigmatization of physical impairment.

However, the *impact* of such ableism is also showcased and critiqued. For the first several years of her life, Olive is raised exclusively by Elspie; her mother is too disgusted by her disabled progeny and her father is abroad and unaware of her disfigurement. When Captain Rothesay returns home, he finally learns that his daughter is hunchbacked and turns away from her, horrified. Although a mere child, "Olive saw the gesture. Young as she was, it went deep into her child's soul" (p. 33). Again, Olive's youth is referenced. However, instead of regarding her as pitiable and innocent due to her age, the narration grants her agency and wisdom, clarifying that she can and *does* understand adults' ableist gestures. Short syntax conveys the simplicity of this revelation, highlighting how quickly and pointedly discrimination wounds. This demonstration may not be rooted in disability activism, but it is progressive for its time in how it implores readers to consider the scarring effects of ableism.

The text similarly addresses the source of adults' discomfort with Olive's body. Elspie's assumption that Olive will be unmarriageable due to her deformity is shared by the child's parents, generating disdain-turned-pity. When young Olive, unconcerned with romance, claims that she will never marry, her father misinterprets; he believes her ineligibility stems from her looks as opposed to youthful disinterest. "'Of course, she will never marry,'" he murmurs. "'Poor child! — poor child!'" (p. 71). The strength of Captain Rothesay's conviction speaks to the automacy of assumptions that disabled individuals lack romantic prospects. This leads to more pity discourse ("Poor child!") and showcases a heteronormative perspective that deems any future without straight romance inferior.

Another common belief that *Olive* depicts — and challenges — is a view of disability as an objective state. Though Olive can see that her body is different from those of her peers, she is comfortable with her appearance and confident in her worth. That is, until, as a preteen, her "friend" Sara explains that her hunch makes her unsuitable for marriage:

> 'I assure you, dear,' began Sara, hesitatingly, 'it does not signify to me, or to any of those who care for you; you are such a gentle little creature, we forget it all in time. But perhaps with strangers, especially with men, who think so much about beauty, this defect—'
>
> She paused, laying her arm round Olive's shoulders — even affectionately, as if she herself were much moved. But Olive, with a cheek that whitened, and a lip that quivered more and more, looked resolutely at her own shape imaged in the glass.
>
> 'I see as I never saw before — so little I thought of myself. Yes, it is quite true — quite true.'
>
> She spoke beneath her breath, and her eyes seemed fascinated into a hard, cold gaze. Sara became almost frightened.
>
> 'Do not look so, my dear girl; I did not say that it was a positive deformity.'
>
> Olive faintly shuddered: 'Ah, that is the word! I understand it all now.' (pp. 89-90)

Olive's surprise that her appearance would be stigmatized highlights the social construction of disability. Given her body's deviation from the "norm," an arbitrary determination of her physical failure is broadly adopted. The novel thus points to ways in which society rather than impairment itself constructs circumstances that disadvantage disabled bodies.

In spite of Sara's suggestion, Olive does *not* end up alone. Instead, she is the romantic interest of not one but two eligible men (both nondisabled): her childhood playmate Lyle Derwent and clergyman Harold Gwynne. This is not without room for critique: Robert McRuer's contention that with heterosexual courtship comes able-bodied status (as for *Jane Eyre's* Mr. Rochester) is again invoked. As Olive matures, the narrator suggests that "nature had bestowed on her this great beauty, in order to veil that defect which, though made far less apparent by her maturer growth, and a certain art in dress, could never be entirely removed" (p. 177). The lessening visibility of Olive's deformity and her otherwise near-total adherence to feminine beauty standards is framed as necessary to the protagonist's ability to secure men's affection.

Still, Olive is fleshed out beyond her appearance. Unlike many other disabled characters of the time (Tiny Tim, from Dickens' A Christmas Carol, for instance), her personality is not conflated with her disability. She is intelligent, patient, wise beyond her years, and, in an inversion of gender roles, the family's main breadwinner after the passing of her father. She finds joy in art, her Christian faith, and socializing with loved ones. In an ironic twist of fate, she also becomes a caregiver to her mother who loses sight as she ages. With this move in particular, the text seems to cheekily, yet earnestly remind the reader that anyone may become disabled at any time. While this argument may be problematic from a modern perspective — after all, we should treat others with respect regardless of their proximity to our own identities — it was likely effective at the time in advocating acknowledgement of disabled lives.

Let us now return to Olive's suitors: When Lyle admits that he has pined for Olive for years, he exclaims, "'All the poetry I ever wrote was about you — your golden hair, and your sweet eyes. You seemed to me then, and you seem now, the most beautiful creature in the whole world'" (p. 365). Although Lyle's evaluation of Olive is still based on standards of feminine beauty — which, again, Olive more-or-less meets apart from her disability — that he sees her as beautiful deviates from the then-dominant cultural script. When Olive, startled, alludes to her hunch, Lyle hastily replies, "'I know what you would say [...] But I think nothing of it — nothing!'" (p. 366). The young man's reaction is complicated. On the one hand, it removes Olive's body from her fitness as a romantic partner. On the other hand, it functions as the able-bodied equivalent of a white person's claim to "not see color," dismissing the existence of something that has decidedly shaped Olive's oppression. Similarly, it implies that Lyle loves Olive *despite*, not *including* her disability.

This is not the case for Harold Gwynne, the man that Olive ultimately weds. In a comparable scene, Olive again indicates shock that Gwynne returns her affection and wonders why he cares for her despite her looks. To this, Gwynne responds, "'Olive, if you love me, and believe that I love you, never grieve me by such thoughts again. To me you are all beautiful — in heart and mind, in form and soul'" (p. 417). Harold's reference to "all" Olive's beauty achieves two ends: It does not exclusively locate her beauty in her looks, also referencing her kindness and intelligence; and it includes her body and so-called deformity in its assessment of Olive's virtues. The reader cannot help but feel joy for Olive who has found a partner who supports and loves the whole of her. The text thus offers an alternative future in which disability can be celebrated rather than reviled or ignored.

Once married, Olive and Harold choose to adopt rather than have a biological child. Literature professor Martha Stoddard Holmes speaks to Olive's decision not to reproduce although this was considered a wifely duty at the time of the novel's setting and publication: "The fact that Olive does not have a biological child, combined with some suggestions of family hereditary 'taint' as a cause for her disability, might imply that this outcome is Mulock

Craik's mode of narrative prophylaxis; she will allow her disabled heroine to marry, but not to reproduce" (Stoddard Holmes, 2017, p. 71). Though this may suggest an underlying eugenic impulse, Stoddard Holmes clarifies that "an important counter to this is biographical." Crucially, Mulock Craik, "who married George Craik, a disabled man [...], became an intensely happy mother through adoption of a baby girl" (p. 71). As George Craik was not disabled at birth but rather injured in a railway accident, the couple's choice to adopt could not have been rooted in prophylaxis ("Craik, Dina Maria Mulock (1826-1887)"). Therefore, it is likely that Mulock Craik wished to celebrate adoption rather than promote eugenics in *Olive*, demonstrating that disabled individuals can have vibrant, joyful romantic relationships and family lives.

Olive captures ableist societal messaging by positioning disability alongside heteronormativity and engaging in pity discourse. However, it also spotlights disability, showcases the damaging impacts of ableism, and rejects notions of disabled people as inherently desexed or unlovable. Given its temporal context, it was ahead of its time in promoting disability recognition and justice, a truth that exclusively paranoid readers may not appreciate.

Conclusion: Much to Repair

Jane Eyre and *Olive* reflect the ways in which the gender binary has excluded and punished disabled individuals (a truth that, frustratingly, persists into our present). For those sexed and socialized as male, strength and independence were prized, but virility was especially demanded. Meanwhile, adherence to beauty standards was expected of "proper" women. Strikingly, for both men and women, heterosexual courtship was considered a necessity to adequate gender performance, an ironic expectation given that no legitimate (that is, non-socially constructed) link between sexual orientation and gender exists. These texts thus reveal the importance society has placed on policing the gender binary, compulsory heterosexuality, and compulsory able-bodiedness, all of which become poisonously intertwined. The result: A nondisabled woman is elevated in a contrived gender role-reversal when her impaired partner is unable to meet hegemonic masculine standards, and a disabled woman is understood as beautiful only because her hunch has receded with age. However, in these very same texts, depictions of disabled characters as worthwhile, intelligent, and sexual exist alongside insensitivity: Rochester experiences genuine domestic bliss as a husband and father, while Olive Rothesay demonstrates that disabled people can be — and *are* — three-dimensional, powerful, and attractive.

As criticism and celebration thus combine, it is clear that a linear appraisal of these texts is impossible. Instead, the reparative reading practice encourages us to *crip* the reading process. As Feminist, Queer, Crip author Alison Kafer explains, "crip" — with its wince-inducing connotation — "suggests an urge to shake things up, to jolt people out of their everyday understandings of bodies and minds, of normalcy and deviance" (2013, p. 15). These implications have enabled the term to take shape as a verb — i.e., "to crip" — which implies questioning, experimentalism, and radicality. By cripping this literature, we re-envision texts as folding in on themselves, offering numerous interpretations that require non-chronological and layered readings. As Heather Love suggests, it is only by honoring pain and pride simultaneously that marginalized groups can understand themselves enough to move forward…without, of course, ever fully letting go of the past.

Just as the reading process becomes non-linear, so too does time. Revisiting these texts and noting the exciting real-world changes and saddening stagnancies since their publication shatters notions that time is a chronological being.[2] The works analyzed in this article had — and still have — tangible impacts on the disabled community: they predicted, portray, and perpetuate popular treatment of those with physical impairments. As we are well-aware, repackaged forms of ableism still police disabled bodies, and eugenic impulses underlie the popularity of genetic testing and the so-called obvious necessity of aborting fetuses that will be born with impairments. As Marsha Saxton emphasizes, "It is clear that some medical professionals and public health officials are promoting prenatal diagnosis and abortion with the intention of eliminating categories of disabled people [...] [M]any disability activists and feminists regard selective abortion as 'the new eugenics'" (2006, p. 107). With this in mind, Olive's opening scene — the infant's sudden rejection by Elspie and her mother upon discovering her curved spine — adopts a new resonance, one that echoes across more than a century. Likewise, Riva Lehrer's reflection on nondisabled disgust toward disabled bodies ("Where did you go? When did you go? I guess, after all, you were spooked by me," she says of an almost-lover (2012, p. 232)) makes Rochester's fears of romantic rejection seem less like a distant past and more like a prelude to our present. With boundaries between past, present, and future blurred, temporality too, becomes meaningfully cripped. The subsequent collapse of time-based boundaries requires us to consider the disabled community — and any community at all, for that matter — in a nebulous, untethered manner, appreciating nuances, growth, regression, and everything in between, irrespective of chronology.

Can we truly claim, then, that sources are ever completely irrelevant or worth canceling? I argue that the answer is *no*. Readers can always return to gendered portrayals of the disabled community throughout history to understand how these identity facets have shaped the present-day status quo, as well as to engineer a more equitable future. Canonical representations of disability highlight the need to dismantle stereotypes and reform an often ableist and exclusionary society. The texts I have analyzed and their relationships to our imperfect present indicate that there is much repair to be done still. We can learn from these stories in order to fight pity discourse, deny the desexing and underestimation of impaired bodies, challenge compulsory able-bodiedness, gender performance, and heterosexuality, and recognize the need for more accessible, inclusive spaces. Simultaneously, we can celebrate the anti-ableist triumphs of these tales, venerating beauty as well as condemning ugliness. Finally, both the helpful and harmful elements of these works can inspire modern writers to pen new stories, stories that authentically and lovingly spotlight the disabled community. In this way, literary analysis and disability studies undoubtedly benefit from a mutually symbiotic relationship. Academics have already articulated ways in which the literary world can learn from the findings and advocacy of disability studies scholarship. I believe that Sedgwick and Love demonstrate that the reverse is equally true: the disability studies field can be similarly bolstered by the reparative, backward-feeling practices of literary analysis, thereby venerating the rich, tumultuous, and kaleidoscopic history of the disabled community.

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Author Footnotes

[1] In this article, I describe men and women as separate genders. It is essential to highlight the danger of this decision, which reifies the gender binary and does not make space for those with identities that are not exclusively "male" or "female." However, I made this choice to best reflect the literature of the nineteenth century, during which time there was little acknowledgment of non-binary identities. Additionally, much of the scholarship that exists in modern disability studies focuses on the experiences of men and/or women. Further research must be done to recognize and celebrate the lived realities of genderqueer individuals, both historically and today.

[2] This concept neatly aligns with that of crip time; just as disability activists fight to free diverse and disabled bodies from forced conformity to the (nondisabled) clock, so too might we liberate the narrative.

Features

FEATURE | SOCIAL SCIENCES

Beauty Queens and Sociology: An Interview with Victoria Li

Written by Julia Claire Johnson '28
Washington University in St. Louis

The shining stage lights, the glitz and glamour, the fierce competition, and the undeniably gorgeous contestants are just a few reasons why the Miss Universe pageant is such an enduring cultural phenomenon. Founded in 1952, the global beauty pageant attracts half a million viewers per year and is broadcast to more than 190 countries and territories. But what makes someone a winning contestant?

Enter Victoria Li, a recent WashU alum from the class of 2025, who majored in economics with minors in computer science and dance. Currently, she works as a consultant for a tech company headquartered in St. Louis.

After competing in the Miss Asian Global beauty pageant, Li wanted to investigate the similarities between winning contestants she saw in both her own competition and the Miss Universe pageant. "...in my pageant," she said, "...the people who place in the top five are actually on the older end [of the age range], so I was very curious if this was a trend."

Using her background in sociology, data science, and machine learning, Li analyzed the profiles of semifinalists and finalists to explore any common factors that may be the key to their success. She used algorithms XGBoost and SHAP to determine the importance of each factor and if they had a positive or negative correlation with winning the pageant. Li included country-level attributes such as population, economic freedom, and male-to-female ratio, as well as personal factors like height, age, and level of education.

Although Miss Universe had been running for over 70 years, one challenge Li encountered was the lack of data points, as many early records were incomplete or missing. This led her to narrow the scope of her research to the years 2010 to 2021 while smoothing missing data points from the 2020 COVID pandemic.

Li discovered that the most important factor was a contestant's national GDP and tourism revenue as a percentage of GDP, which had a negative influence on winning. "I was actually very surprised," Li said. "I found out that countries with lower GDP per capita and lower tourism revenue as a percentage of GDP tend to have higher success rates in beauty pageants because they tend to invest more in [them]... potentially because they want to use [the pageant] as a platform to promote tourism or promote their country, especially for countries in Latin America."

"My research is a good example of using machine learning and data mining in analyzing social science phenomena," Li explained when asked about future studies. "I think qualitative data is also powerful because in beauty pageants, there are a lot of different factors… Just GDP alone doesn't really account for all the factors that contribute to success."

"Personally, [this research] has been influencing me a lot and how I feel pageants are more than just about beauty. Even though we say it's a beauty pageant, it has more factors: cultural, political, and social."

When asked about the future of data science, Li replied, "I see a lot of things related to AI… and data is a very big thing. I personally am very interested in AI and seeing how this can really be used and applied to a lot of things in our daily life, not just in technology, but also in places like the fashion industry or in restaurants."

"[The field is] growing at a very fast pace… and I think learning more about data science and AI will be helpful for my job as a tech analyst."

Li is very self-motivated and strives for self-improvement. She joined the Miss Asian Global beauty pageant for the opportunity to give back to the community, but also to gain confidence and improve her public speaking skills. Her research project, inspired by her experiences in the pageant, was a personal interest separate from any department at WashU, yet she had the courage to present her work at the university undergraduate research symposium.

When she first competed in the pageant, Li described herself as "on the introverted side." At only 17 years old, she barely made the age requirement to compete and had many public interviews about world politics and social justice, which, as a high school student, was daunting. These experiences pushed her to socialize with people more and form connections with people outside of her community. "A lot of the skills we learn in pageants are more than just the catwalks," Li joked. Public speaking and communication skills are also crucial in research, as researchers must communicate their findings to different audiences for education, awareness, and funding.

Li advised students to take advantage of research opportunities on campus, even in fields that are outside of their major. "I also did sociology research, even though I wasn't in a sociology major or minor, with Professor David Cunningham in the Civil Rights and Restorative Justice lab." In college, Li was the president of the Archery Club, was part of the Robotics Club, did ballroom, jazz, and contemporary dance, and went scuba diving in her free time.

"It's a very interdisciplinary world right now," she said, "just always be brave to try new things." Whether onstage or in a lab, confidence and curiosity about the world are the keys to success. ■

FEATURE | SOCIAL SCIENCES

Detainees to Diplomas: Prison Education with Colette Correa-Bruzzese

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Measured per every 100,000 individuals, Missouri's incarceration rate exceeds the United States' national average, dwarfing those of the UK, Portugal, Canada, France, Belgium, and Italy combined. Law enforcement agencies and academics nationwide have pursued many solutions to bring down incarceration rates, but one stands out: prison education programs. In these programs, universities partner with correctional facilities and prisons to provide degree programs for inmates.

WashU has its own version, the Prison Education Program (PEP), and Colette Correa-Bruzzese is on the case. Colette Correa-Bruzzese is a sophomore pursuing a double major in International Affairs and Latin American studies, with a minor in Spanish.

Correa-Bruzzese admits her research is a bit outside her global studies field, but says "if you're interested in something, you could find a way to make it work, [you] go for it." Her interest in prison education bloomed during high school, where her social justice class learned about prison reform. "My mom was my teacher for that class and so this is . . . a passion of hers," she says. Her mom now works as a science teacher for an Albequerque jail and is good friends with a Louisiana prison education graduate, whom Correa-Bruzzese describes as "family-friendsish."

Her education on social development continued after joining WashU, where she learned about social capital in College Writing: Power and Commodity Culture. Correa-Bruzzese's work is her final research paper for the course, a dive into the lived experiences of PEP participants in the context of WashU's history in St. Louis and social capital.

Using her connections to former PEP faculty members, including her college writing instructor Professor Eileen G'Sell, Correa-Bruzzese collected interview responses from faculty members and survey responses from PEP graduates. The survey contained 5 demographics questions and 4 questions about the participant's experience in the PEP program, requesting a ranking from "Strongly Agree" to "Strongly Disagree" with additional space for long-response submissions. The survey questions were designed to measure participants' perceptions of self-efficacy as a result of the program, confidence as a result of studying with WashU, and a space to describe additional thoughts and experiences in the program.

Correa-Bruzzese notes there were a few hurdles to her work. "My goal [was] to send [the survey] to as many participants in the program as possible. I was only able to send it to three people . . . because of the confidentiality reasons." These participants were either directly known to Professor G'Sell or were contacted by other participants; the PEP program maintains confidentiality, and any record of participant contact information is not available to the public. Faculty contact information, however, is publicly available, though only three members responded to Correa-Bruzzese's request for an interview. "That's also like, a pretty limited number of people to interview but . . . it was a limited timeframe," she says, noting the small window of time college writing students can work on their research papers.

Despite the small sample sizes, Correa-Bruzzese's work yielded surprising results. She says of her goal, "I was basically looking at how . . . by attending an elite university like WashU, you increase your social capital because you have these connections to . . . powerful people . . . [and] how being in the PEP would affect [the participants'] social capital." Her results corroborated a national trend of increasing participant social capital but also revealed a new perspective on PEP-style programs, one not found in previous Boston or New York studies with purely positive responses. From an interview with a faculty member, Correa-Bruzzese discovered that participants are thinking, "'Why is WashU showing up for me in this way now, and not at any time before in my life?' Like, now that I'm in prison, now WashU is available to me when before, it might have been completely inaccessible."

The future of the PEP program is bright, however. The three participants in Correa-Bruzzese's study all graduated with degrees, one even continuing studies on the Danforth campus and obtaining a STEM degree, which Correa-Bruzzese notes is rare for prison education programs overall. The PEP program has expanded to facilities for both men and women and continues to celebrate new graduates.

When asked about further studies, Correa-Bruzzese said, "We could expand a survey . . . to more people and more participants in the program to get a better understanding of how it works," suspecting that the participants and faculty she interviewed were more likely to have a positive experience considering they were willing to participate in this study. She also wants to see "different perspectives within the prison, like what does the correctional officer think . . . or you could compare the difference between, like, the men's prison and the women's prison."

Another avenue of further study is WashU's relationship with St. Louis. After WashU rebranded to remove "in St. Louis" from its previous title, the university's motto, "In St. Louis, For St. Louis," is all the more relevant. Correa-Bruzzese plans to continue her PEP research in some capacity and encourages other students to look beyond the WashU bubble as well. She said, "I think while there's . . . a general understanding about the university's past within St. Louis . . . it's important for people to just be aware of the different experiences of people and [how] other people see WashU and interact with WashU." "If you're a student here," she said, "you also have a place in that. Like you are now a member of the community, and that means something."

As for Correa-Bruzzese's future, her interest in prison reform continues to grow. "I just got involved with a new organization on campus called Missouri Prison Studies," she said, "and they're looking at creating a . . . yearly publication of people, incarcerated people or formerly incarcerated people, [and] sharing their stories, especially ones that may have participated in the PEP." "I might be on the publication end of that," she laughed. "Look out for it." ■