

An abstract oil painting of a face, rendered in a soft, impressionistic style. The colors are muted and blended, with shades of blue, green, yellow, and pink. The brushstrokes are visible, giving the painting a textured, painterly quality. The face is the central focus, with the eyes and mouth clearly defined by the brushwork.

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Artist Statement

My work centers on exploring themes of self-image and identity, specifically looking at female bodies and the ways in which they are perceived by both others and themselves. Through painting, I look at the tension between external perceptions and internal experiences of identity. I look at how these perceptions shape our sense of self and how it impacts the way we exist in our bodies. This self-portrait was made in an effort to move outside of naturalistic representation while still capturing the idea of self-perception.

Melora LaVigne
CLA 2025

Foreword

The Drew Review, Drew University's annual double-blind undergraduate research journal of the College of Liberal Arts (CLA), commemorates talented students and their impressive authorship of the previous academic year through faculty nomination and subsequent publication.

As a double-blind, peer-reviewed journal, all submissions were submitted without any identifiable information, such as the student's or professor's names. Papers are either rejected or sent back to the author with recommended edits, and this process may occur several times before publication. This year, we received a total of 20 submissions and have published only 9, thus emphasizing the efforts and ability of these authors.

Those interested in submitting their work in the future will require a faculty nomination, which must include the author's name, paper title, and a brief rationale for nomination. All images will be published in black and white, and it is the author's responsibility to ensure that the images are permissible for reproduction under copyright law.

We are very grateful for our faculty advisors Dr. Kimberly Choquette of the Chemistry Department and Dr. Jacob Soule of the English Department. Their help and support is instrumental to the success of *The Drew Review*.

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Re-Orient Your Self in Writing:
Examining the Passive Voice
Construction in *The Drew Review*
Serena Mancuso

Abstract

Oftentimes in academic writing, students favor impersonal, formal prose that inhibits their natural voice as a writer. In this paper, I posit the act of writing as a conversation between writer and reader, and that we may accentuate this dialogue through certain linguistic measures. Through the use of personal pronouns, we can directly call upon ourselves and our audience. But, in the scope of academia, how often, if at all, are students making this choice? To investigate this question, I devised a corpus of five humanities papers published in Drew University's 17th volume of *The Drew Review*. I analyzed each paper, observing that students were hiding behind the passive voice grammatical construction in order to avoid naming important parties involved within a word transaction. I coded usage of both the passive and active voices, finding that students not only favored the passive voice, but that the passive voice itself exists within a continuum of passivity ranging from Explicit, to Implicit, to Remote, and to Active. I discuss the importance of raising awareness of the linguistic tools available to us in writing.

Introduction

Think about the most recent paper you've written. Specifically, think about the language you used to write and discuss your argument *within* that paper. Now, compare it to the language you would use to describe this paper to a friend or professor. In what ways does your voice differ? Really think.

"You mean I can just say it that way?" In chapter nine of their writing handbook, Gerald Graff and Cathy Birkenstein unpack the misconception that informal, everyday language "makes you sound stupid" (124). As a writing tutor myself, students have expressed to me this same confusion, shocked to know that they can, in fact, "just say it that way." The tone in their voice indicating, always, an uncertainty that colloquialism could hold room within essay-writing. But the wording of the question itself, a sign that students cling to a structure of academic writing that prunes their personality. So, what if there *were* space to salvage our natural voice, even amidst an academic writing that blockades what *They Say/I Say* coins as "everydayspeak?"

Let's return to that example. The language you used to construct your paper was likely more sophisticated, professional, scholarly, and "matter-of-fact" in order to match the academic space you were writing within. But in describing its contents, your words conversely sound more casual, straightforward, or even "dumbed-down." This is because you are speaking into another part of yourself that isn't trying to look good on a page. In his article entitled "Why Academic Writing Stinks: And How to Fix It," linguist Steven Pinker argues that scholars, academic writers like you and I, suffer from unpleasant,

bloated, highfalutin prose (Pinker 2). Even with his bold stance, we may learn a thing or two about what Pinker dubs as “academese.” For one, he describes a piece of writing as a *conversation* between a writer and a reader—the two absorbing the “spectacle,” the subject of the paper, in tandem (Pinker 4). Similarly, in her book *Stylish Academic Writing*, Helen Sword acknowledges a “gap” between the writer and reader, agreeing that academics are “[addicted] to big words and soggy syntax” (Sword 3). Her book aims to re-center the reader experience, deconstructing academic writing as a thing that most writers feel a need to “conform” to. It must be significant that both Pinker and Swords highlight the same problem within academic writing—that writers distort their meaning, its delivery, through distorted word choice and grammar, and in turn, distort their relationship with their audience. Furthermore, their hyperfocus on the writer-reader bond, as two bodies working together throughout a text, will help us consider a writing that remembers this ensemble in the first place.

The act of writing, at its skeleton, inherently involves receiving, entering, and continuing a discussion. A writer sources the materials of *other* writers to flesh out their own claim, and writes with the purpose of reaching a specified audience. Through an ongoing conversation, a writer mediates knowledge, shaping a conference between themselves and their reader concurrently. The writer-reader relationship is not only intrinsic to any piece of writing, but should be alive—accentuated, textually. In other words, what are some linguistic measures we can actively take in order to re-orient ourselves as the writer, and our audience as the reader, back into our text? As you can imagine, Pinker and Sword both touch on this idea briefly, but in his

research, “Options of identity in academic writing,” Ken Hyland declares that a writer’s identity is blatantly constructed through the pronoun *I* (352). So then, if a writer can so simply call on themselves through a pronoun, re-entering their text, they can also call upon their readers in a similar manner.

With the works of various scholars in mind, I decided to investigate how, if at all, students were deploying certain linguistic tools to either display or conceal the two major parties involved in their writing. In particular, I found myself interested in personal pronouns and their degree of usage. In doing so, I soon discovered that these pronouns either emerged or vanished alongside two grammatical constructions: the active and passive voices. A research initiative clearly emerged, and I proceeded to analyze the grammatical climate of a variety of selected texts. My argument was then well-defined: Students should strive to orient themselves within academic writing through the usage of personal pronouns and the active voice. And in order to investigate this, my research question was as follows: How exactly do students use the passive and active voice grammatical constructions?

Methods

As a quick refresher, because grammar is notoriously known for being tricky, I will briefly define the linguistic elements I chose to focus on. First, because my interest was in the writer and reader, I paid attention only to personal pronouns in first and second person, both singular and plural forms: *I, Me, My, Mine, Myself, We, Us, Our, Ours, Ourselves, You, Your, Yourself*. (This excluded third person pronouns like *He* or *She*.) Secondly, while it will seem monotonous at first,

understanding how both the active and passive voices are constructed is extremely important for us moving forward. So stay with me!

The active voice is when the subject of the sentence is *performing* the action of the verb. See the example below, where the pronoun *I* is *doing* the washing of the car:

I wash the car.¹

This is compared to the passive voice where the subject is now *receiving* the action of the verb (as opposed to doing it).

The car was washed.

In the passive, the subject is in a state of being. Notice how the car, originally the object in the initial sentence, now becomes the subject in the passive voice. The passive voice is characterized by three aspects: 1) the object swapping with the subject², 2) the new subject *receiving* the action, and 3) a form of the verb *to be* followed by a past participle. However, you'll notice that the main difference between these two sentences is that the personal pronoun, the original actor of the sentence, is no longer present. That's because it was deleted once changed into the passive voice. These constructions are

¹ I will continue to use these typographical emphases (bold, underline, italics) to distinguish the Subject-Verb-Object of the sentence, respectively.

² As noted, all passive phrases will have the original object in place of the original subject, i.e. swapped. However, some will exclude the new object to save from awkward wording. For instance, the sentence "**The car was washed**" no longer has a seen object but could include one to read, "**The car was washed by me.**" Firstly, see how the object and subject have completely swapped places. Second, passive phrases that *do* maintain any authorial pronoun/phrasing (e.g., "*by me*"), were not included specifically because of their presence of an authorial pronoun. The lack of pronouns, of agency, is what I decided makes them of note. *Who* washed the car? The sentence becomes ambiguous, directionless when the actor is omitted.

relevant to our conversation because the active and passive voices tend to be where personal pronouns are either often found or often *lost*. Have I confused you? Luckily, there will be plenty more examples throughout the remainder of this paper. For now, let's get to the fun stuff.

To investigate my research question, I thought it best to not only analyze the production of personal voice within academic writing, but specifically, within *student* academic writing. This task was obvious to me as observing my own writing would raise ethical limitations concerning bias, and observing scholarly writing produced by scholars (like Pinker, Sword, or Hyland) was simply nonsensical for the scope of this study. My curiosities lay within the realm of academia, and so, honing in on undergraduate writing in my immediate surroundings proved to be an ideal and relevant means of examining how young academics view themselves and their readers in relation to their writing. This said, I analyzed student writing published in Drew University's annual research journal, *The Drew Review*. *The Drew Review* is a student-run publication that features faculty-nominated papers from every discipline—perfect for conducting research of my own. Their goal as an organization is to “showcase the intellectual vibrancy of CLA students” (The Drew Review). I observed their latest release, Volume 17, published in the spring of 2024, to gather a clear overview of the current state of writing as recently produced by my peers.

While volume 17 consisted of eleven essays each by eleven different students, my research focused on a specific five published within the humanities department. The titles of each paper were as follows:

1. "The Fluidity of Grief in William Shakespeare's Hamlet"
2. "Travel Writing Across History: The Evolution of the Genre & Its Cultural Influence"
3. "The Intersection of Arts and Crafts Medievalism and Late Victorian Orientalism: A Closer Look at William Morris's Bullswood Carpet (1889)"
4. "Colonial Thought and Environmental Aesthetics"
5. "The Virgin Paradox: How Sex is a Method of Escape and Oppression for Men in Ishiguro's Novels"

Together, these essays made up my corpus of writing that I continuously drew from throughout my research. Additionally, students' names were redacted for anonymity purposes and will be addressed as Student 1, Student 2, Student 3, Student 4, and Student 5 respectively.

I placed my focus on the humanities discipline for a few reasons. As a discipline seeking to better understand ourselves as humans (and approaching this feat under a wide array of sub-fields), the humanities hosts a space where personal pronouns, paired with the active voice, are invited and helpful to the content being produced. Out of all the disciplines, the humanities tend to be an "acceptable" arena for these grammatical choices, especially cognitive verb phrases like "*I* believe" or "*I* think." This is because the author's standpoint is likely relevant and elevating to the paper in which their argument is being realized. Essentially, personal pronouns and the active voice are deemed

“appropriate,” and the context in which their scholars write, an “appropriate” place for their presence.

In their discussion of identity in academic discourse, John Flowerdew and Simon Wang comment on “disciplinary identities,” taking note of a force that derives from disciplinary communities and pushes students to “conform to certain rules and conventions” of said academic discourse (Flowerdew and Wang 83). With this in mind, it makes sense that the writings of other disciplines, such as within the natural sciences, differ greatly. This is because the sciences usually favor an objective tone that removes primary actors (i.e., the researcher and their audience) and emphasizes their object of discussion, instead. In his study on “authorial pronouns,” Hyland found that 75% of personal pronouns in his 240-paper-corpus took place in the humanities and social sciences. He concluded that “...while a stronger identity is claimed in the humanities and social sciences papers... writers in the hard sciences and engineering prefer to downplay their personal role to highlight the issue under study...” (Hyland 352). Essentially, scientific writers choose an impersonal writing style in order to subordinate their voice beneath their research. You will see scientific research reports framed with sentences just like this one:

Observations were gathered in regard to the sample site and soil³ (Student 6, 89).⁴

(I told you there would be more examples!). Here, we can see that the passive voice is purposeful. In his discussion on author's stance, Alexander Barratta argues that, contrary to popular belief, the passive voice may actually help *demonstrate* a writer's agency. Through its use, he explains, the author de-emphasizes the actor, the original subject (themselves), and places an importance on the object; "...the subject is deleted because the object is the topic of discussion" (Baratta 1409). This type of language builds a proximity toward the materials being worked with, the things being done, and in contrast, a distance from the *who* that is behind the research or experiment. This is also because, in some instances, we can automatically assume who it is that is performing the action, just like how we can make a pretty good guess as to who is doing the "observing" in the above example (hint: Student 6). In short, oftentimes in scientific reports, the passive voice may be helpful when the agent in an action is "implicitly understood" or "not important" at all (Baratta 1409-1410).

As Flowerdew and Wang clarified for us earlier, science students orient themselves on the basis of the disciplinary discourse that they are writing within. While I do personally think that all disciplines can benefit from

³ To make this sentence active, it would read 1) **I gathered** *observations*... In the above sentence, the subject (the observations) *receives* the action (being gathered) as opposed to *doing* it. Take note of how "Observations" is characterized by its preceding verbs. Additionally, the actor (the researcher) is absent. But in this revised sentence, I reintroduce the pronoun *I*.

⁴ Student 6 is from Volume 16 of *The Drew Review* and is not included in my corpus of writing.

re-orienting themselves within their text (because shouldn't we take charge over our hard work and unique ideas?), most writing outside of the humanities is defined by and with the passive voice construction, the negation of personal pronouns. This said, I thought it would be far more effective to use my time by evaluating these linguistic elements only in humanities papers—a discipline that welcomes identity and a discipline that I happen to specialize in myself. I would likely yield far more material for analysis here than anywhere else. Finally, I took to my corpus, answering that one question: How well do humanities students deploy the active and passive voice?

As we previously discussed, in order to determine the existence of a writer's voice, we must zoom in on personal pronoun usage by focusing on two aspects: one, where the passive voice is present and two, where the active voice is present. By locating each of these elements, I was able to quantify how comfortable the student was with directly mentioning themselves in relation to their claim as well as their audience. For example, because most students adhered to a traditional academic writing "style" for the majority of their papers, there were many instances where the actor or subject had distinctly gone missing from a word transaction (a sentence)—where students deployed the passive voice in place of personal pronouns. In order to keep track of the linguistic moves taken by students in their writing, I created a "Coding Key" (Table 1) that lists the specific linguistic elements of interest, assigning each a color and a corresponding definition. I then used these elements to code the papers within my corpus, helping me indicate a particular voice—if at all. My Coding Key reads as follows:

Table 1 - Coding Key⁵

Color	Definition
Red (EP)	Explicit Passive. Object becomes subject; instead of doing the action, the object becomes the “receiver.” Actor is deleted, missing a personal pronoun. Characterized with forms of the verb <i>to be</i> followed by a past participle. (Traditional passive voice.)
Yellow (IP)	Implicit Passive. Subject may still have an active role, but it remains unclear as to who is exactly speaking/being indicated. Actor (pronoun) is missing, avoids naming members involved in the word transaction. Often seen with abstract concepts that are not concrete.
Gold (RP)	Remote Passive. Author keeps both themselves and the reader on the outside with third-person pronouns or vague language that excludes us from the word transaction.
Green (AV)	Active Voice. Author directly refers to themselves or their audience, whether through the active voice grammatical construction or through specific pronoun use.

As you can see, examining student writing was much less straightforward than simply searching for the passive and active voices. In fact, the coding process itself was a learning process. I first jumped into my corpus looking for forms of the verb *to be* joined with a past participle, or simply where a subject was receiving the action from a verb (both indications of the passive

⁵ **DISCLAIMER:** Because colors were not printable in this publication, I instead inserted abbreviations for each code: (EP), (IP), (RP), and (AV).

construction). But, through making specific observations of student writing, I began picking up on *other* instances that were equally relevant and significant. My quest of research then shifted to favor a broad overview of looking at each paper, its use of linguistic repertoire, holistically. Therefore, while the passive voice can be clearly defined, I took note of other moves that fell under a similar umbrella of passivity, not necessarily in its definitional sense, but in an evocative way that was unassertive and left out significant parties involved within a word transaction. I concluded that accounting for our traditional sense of the passive voice was not enough, because evidently student writing proved to constitute nuanced means of concealing personal voice. This is why breaking down my coding scheme into various categories was necessary. All degrees of the passive voice—Explicit, Implicit, and Remote—were my own terms of interpretation (as well as the Active, which was modified to include instances of *any* personal pronoun usage). I will clarify each level of passivity (or activity) shortly.

Because my focus is specifically on voice and identity, I only coded passive phrases that fell under this category, leaving out sentences that did not relate to either the author or the reader. That is, sentences regarding *content* were not included. We are concerned with the “who” rather than the “what.” These two individuals, the writer and their audience, are precisely what indicate a sense of conviction for and identification with one’s claim. Put simply, passive sentences were only highlighted Red when usage of the traditional passive voice construction was detected. Yellow phrases are distinct from Red because they are not definitionally passive, yet an actor is still missing despite our implicit

knowledge of who is being indicated. Gold phrases are related to the student's diction that positions them and us on the outside of the conversation of their paper. Finally, on the other hand, Green phrases indicate a personal pronoun and/or the active voice. Using this coding scheme, I analyzed the application of personal voice in student writing.

Results

Context:

Before we dive into the crux of my findings, it is important we refer back to a point I made about my research process. While my "Methods" section outlines why it was necessary to define various levels of the passive voice when creating my coding system, the fact that I was able to locate these various levels is in and of itself a result. In investigating each student paper, I discovered that the passive voice existed on a spectrum of "passivity"—ranging from Explicitly passive, to Implicitly, to Remotely, and eventually to Active. By extension, I recognized "voice," on its own, within this same spectrum, going from either completely passive to completely active (and all other shades I coined in between). Therefore, it will be helpful for you to first see real examples of how the students in my corpus put each linguistic element into play. This will clearly demonstrate how each level is formed, and how each level differs. You will see examples from each paper followed by an example of a suggested "revision." My revisions will help you further conceptualize how the passive and active voices are constructed.

Explicit Passive: (EP)

1) **Original:** (EP)

Through close reading, looking at both empirical psychological sources, and scholarly sources about grief within the play, the complexity that Hamlet offers to Kubler-Ross' theory is explored (Student 1, 7).

Revision: (AV)

...I explore the complexity that Hamlet offers to Kubler-Ross' theory.

2) **Original:** (EP)

From this it can be understood how this narrative, prose-like travel writing persisted and maintained its power and influence, even as it reached a smaller and smaller audience (Student 2, 61).

Revision: (AV)

From this we can understand how this narrative...

As you can see in these Explicit Passive phrases, Red indicates the traditional construction of the passive voice; the subject receives the action, omitting the actor and hiding its original place as the object. I again use the same formatting seen in my previous examples to help us hone in on the specific parts of speech and how they were treated by students. Followed is what their placement would instead look like in the active voice.

Implicit Passive: (IP)

1) **Original: (IP)**

It is important to note that Axl attributes the cause of this love affair to himself and his own failings (Student 5, 214).

Revision: (AV)

It is important we note...

2) **Original: (IP)**

Insisting that European history is representative of global cultural history erases the rich histories of indigenous cultures... (Student 4, 163).

Revision: (AV)

By insisting that European history is representative of global cultural history, we erase the rich histories of indigenous cultures...

I found Yellow phrases to be characterized by an abstract concept that cannot be felt; “It is important” and “insisting” are not tangible items, but rather, only *behave* as the subject, abstractly. This was followed by the omission of a personal pronoun. For instance, while we can infer who “noting” is “important” for, the actor is nevertheless missing.

While appearing nitpicky at times, it is the *frequency* of these phrases, as deployed by the student, that build to mask one’s authorial identity. In other words, when viewing a paper in its entirety, consistent use of the Implicit Passive (and especially in tandem with other levels of passivity) adds together to conceal voice. Feeling almost peripheral to the Explicit, the

secondary nature of the Implicit Passive is largely dependent *on* this frequency—an aspect you will also see apparent for the Remote Passive. Additionally, we can actually rewrite most Implicit Passive phrases in various ways (e.g. It is important for **us** to note...). This flexibility reveals the multiplicity of writing options that are available to us.

Overall, you will primarily note that the Implicit Passive can often be in the active voice already. It's only the fact that the actor is absent which thus renders it passive. Additionally, I do not use the same typographic formatting here because the subjects are harder to define, being more abstract; in Example 2, “Insisting that European history is representative of global cultural history” *is* the subject. Note how the subject then becomes clarified once a personal pronoun is reintroduced.

Remote Passive: (RP)

1) **Original: (RP)**

By looking at Claudius in the frame of grief and the absence of grief, **readers can understand** the depth of his character more acutely (Student 1, 20).

Revision: (AV)

By looking at Claudius in the frame of grief and the absence of grief, **we can understand** the depth of his character more acutely (Student 1, 20).

2) **Original: (RP)**

Bryson's explanation for the selections he made when curating this issue points toward this underlying idea of the importance of expanding **people's** horizons to permit greater understanding of and connection to the world outside of **their** homes (Student 2, 50).

Revision: (AV)

Bryson's explanation for the selections he made when curating this issue points toward this underlying idea of the importance of expanding **our** horizons to permit greater understanding of and connection to the world outside of **our** homes (Student 2, 50).

I found Remote Passive phrases to be a few things, but mostly defined by a singular word, a party being identified yet that did not receive (but could) a personal pronoun. I coded words that were subjects, objects, possessives, and pronouns—essentially, anytime a person was mentioned remotely, or at a distance through a “placeholder” word. In Example 1, “readers,” the Remote Passive word, is actively performing an action. However, as the readers of Student 1's paper, we are only mentioned “passively” as if we read the paper from an external space excluding us from the writer-reader conversation.

Similar to the Implicit, the coding here may seem unessential. But also like the Implicit, I often found the Remote Passive sprinkled considerably throughout a text. The frequency of these constructions is what comes together to push our actors invariably to the outside.

Active Voice: (AV)

- 1) Within the scope of this paper, **I present a highly focused study** analyzing Morris's Bullerswood carpet through the lenses of Arts and Crafts medievalism and late Victorian Orientalism (Student 3, 74).
- 2) The message **I believe** Leopold was trying to get across—that we must interact with nature through ethical consideration in the same way we interact with each other—is both important and resembles the traditions of indigenous cultures in addition to the work of Saito (Student 4, 162-163).

I found Active Phrases to basically be the exact opposite of every other construction I listed above. An Active Phrase could consist of an authentic subject, verb, and object. Or, it could simply indicate a singular party within a given word transaction through a personal pronoun. In other words, the Active Voice was either our traditional, definitional sense of the active voice or, simply where a personal pronoun appeared.

Findings:

Table 2.1 shows the results of my coding, indicating the number of phrases I was able to locate under each color within each student paper. Because I specified the interest of my research to 1) the Humanities discipline and 2) the formation of voice pertaining to only the writer and reader, it is also important we understand that, compared to the word count or length, the number of coded phrases in each category will not always be a staggering one. However, with such a

narrowed-down research lens, I was able to zoom in on particular linguistic choices that students perform within their writing. Thus, as outlined earlier, it is essential we consider each linguistic element in conversation with one another, holistically. In this way, we view these elements as coming together to build a language that either positions us (the reader) and them (the writer) on the inside or the outside of their text.

Table 2.1- Coding Results

Student Paper	Red-Explicit	Yellow-Implicit	Gold-Remote	Green-Active
Student 1	5	12	19	4
Student 2	6	19	29	4
Student 3	3	7	0	15
Student 4	10	19	8	15
Student 5	3	8	6	0

I now bring your attention to a few interesting observations we can draw upon first glance at Table 2.1, starting with the bottom three students of the table: Student 3, Student 4, and Student 5⁶. Student 3, for instance, had one of the highest counts of Active Phrases (15) and the lowest for passive phrases in the entire corpus with just three Red, seven Yellow, and zero Gold (10 total). We can use her paper as a basis for comparison; even while Student 5 had zero Active

⁶ The consistent mention of numbers is bound to be confusing, but the chart will help guide you through this paragraph.

Phrases or personal pronouns, he is tied with Student 3 for having the lowest number of Explicit Passive phrases (three). Student 3 is also tied with Student 4 for the highest number of Active Phrases (15), even though *he* conversely had the highest number of Explicit Passive phrases (ten). These three points of comparison are significant as they indicate that there is no exact correlation between the number of active and passive phrases within a paper. This is interesting, especially since, at first, we may be led to believe that the two grammatical constructions are “extremes” arising in a “this/or that” condition, as they exist as opposites of one another. For instance, we see this demonstrated in Student 3’s paper (very high Green, very low Red, Yellow and Gold). This is also seen in Student 1 and Student 2’s papers, which both have very few personal pronouns but very high numbers of passive phrases. The three students at the top of the table follow a predictable trend, but Student 4 and Student 5 enter as an anomaly to that pattern. In other words, using a lot of personal pronouns does not always mean that the student never used the passive voice. The vice versa is also true: Deploying mostly the passive voice does not always mean that the student avoided the active. Therefore, in assessing the corpus as a whole, we can conclude that the two grammatical constructions do not emerge in an “either/or” situation, and instead are deployed by students *interchangeably* in a way that at first appears at random.

It makes sense that students were using the two constructions interchangeably as every passive phrase can be made into the active and every active phrase can be made into the passive. The two constructions can be swapped, replaced, and ultimately coexist. In fact, this

idea aligns with one of my main purposes of simply offering a space for possible revision pathways (i.e., adding in personal pronouns where wholly effective, but leaving them out for redundancy's sake or simply where they are not as imperative), as the passive voice is not inherently bad. However, it is also clear that every student, save for Student 3, favored the passive construction as opposed to the active—breadcrumbing personal pronouns at randomized intervals in relation to their use of passivity. Even while swappable, never were the two grammar structures equal. Instead, students were more likely to subordinate their voice and externalize readers at the expense of their topic of discussion. That is, they were more likely to use the passive voice.

Table 2.2- Total Number of Passive Phrases

Student Paper	Total Number of Passive Phrases
Student 1	36
Student 2	44
Student 3	10
Student 4	37
Student 5	17

Discussion

Having to break down the passive voice into multiple sub-labels was in itself a substantial finding; the passive construction was far more expansive than I initially expected and existed within a continuum of

passivity. This proved to me that the production of impersonal and objective tones in student writing is also far more nuanced than we think—students have other ways of concealing personal and subjective tones beyond our traditional sense of doing so. Furthermore, students spend the majority of their papers ensuring that this stays true by continuously avoiding directness that concerns naming important actors involved within the writing and reading of their paper. However, it's unfair to describe this technique as a fully conscious one. I believe students not only adhere to a disciplinary identity but an *academic* identity where they assimilate their voice to what is “appropriate” in the space of academia as a *whole*. This is precisely the “tension” that Flowerdew and Wang point out between both the agency of a writer and the structure of the scholarship (83). This dichotomy causes students to refrain from emphasizing themselves linguistically, unsure of when, how, or if they may use active language at all. Just as Hyland asserts, upholding uniform and impersonal language practices only damages the relationship students have with personal voice that is mediated through writing (351).

Baratta also discusses this continuum, though with voice more broadly, equating “hedging” to one end and “personal opinion” to the other. I strongly agree with his claim that voice, or “stance” as he refers to it, is multidimensional—this fact is even evident within my results, with students using both constructions interchangeably. However, while he raises valuable points, I disagree that the passive construction is a better means of engaging with readers. Baratta argues that it is “arguably” more direct, but there can be nothing more direct than a writer saying “I,” “you,” or “we.” To put him in conversation with Hyland, our identity is crafted

through the degree to which we choose to orient ourselves to our reader. "...Obviously," Hyland asserts, "a writer's identity is created by, and revealed through, the use or absence of the *I* pronoun" (352). And so, the passive voice is a better means of engaging with *content*. Which, given its manifold shades of uses, may inevitably be present in order to fully land a claim. Although, in the context of *this* discussion, we must focus on an engagement that re-centers our actors.

Even while focusing on the humanities discipline, my findings were not exactly on par with my reasoning for selecting this discipline (though, I secretly suspected this would be the case); almost every student favored an impersonal tone that removed them or their reader from nearly every word transaction. In hindsight, I'm not so sure this result would be much different if I included other disciplines into my corpus. With this in mind, what does the sporadic use of the active voice say about how students perceive themselves in their writing? The interchangeability of the passive and active constructions, and the tendency of students to *lean* towards passivity, lends to an insecurity with using these grammatical constructions. Students are unsure or unaware of the options behind the practice of writing itself. In other words, the linguistic tools available to them.

If a student *does* appear to be comfortable with orienting themselves and their audience inside their text (first, great), they should then strive to maintain this voice for the remainder of their paper. For example, Student 2 begins setting up her paper with Implicit Passive phrases that position both herself and us on the exterior of the conversation:

- 1) (IP) This project aims to look...
- 2) (IP) The paper aims to provide...

The above phrases avoid naming herself as the creator of the project, the paper, and us as her receiver. Yet interestingly, a few sentences down on the same page (34), Student 2 throws in an active phrase:

- 3) (AV) By exploring the ways in which societal and cultural perceptions of others have been molded throughout history, we can better understand the relationships that exist today.

For one, “This project” and “This paper” are inanimate objects given the ability to perform the actions of their subsequent verbs: “aims,” “to look,” and “to provide.” Soon after, *we* are the ones understanding, including Student 2, even though she omitted herself only just previously. Similarly, Student 1 describes her audience with three different degrees:

- 4) (AV) This soliloquy reveals what we learn about grief from Hamlet (15).
- 5) (IP) Considering those who do not experience any feeling of grief, a form of mental pathology, is extremely useful when looking at grief within Hamlet... (18).⁷

⁷ The grammar of this sentence is tricky but noteworthy. It begins with an SVA phrase (Subject-Verb-Adjective); the word “considering” as the (gerund [ending in *-ing*]) subject, “is” as the verb, and “useful” as the adjective. Note that the gerund here acts as a noun. The word “when” is then placed as a conjunction that joins with the proceeding phrase (a dependent clause, meaning it cannot

- 6) (RP) By looking at Claudius in the frame of grief and the absence of grief, **readers** can understand the *depth* of his character more acutely (20).

In some instances, the audience is explicitly named, even coupled with Student 1 as the writer (Example 1). But mostly, the audience is deleted completely (Example 2) or mentioned only remotely (Example 3). When extracted and lined up together like this, it becomes confusing how we as the audience are being viewed, how Student 1 decides to view us *and* herself.

Sometimes, we are directly named as the actor engaging with *Hamlet*, but other times we aren't present at all, or even grouped in with a word like "reader" that suddenly removes us from the transaction we were once a part of.

From this we see that, while students recognize the interchangeability between the active and passive, they are inconsistent in their application of them. My critique isn't in Student 2 or Student 1's random addition of a personal pronoun, but rather that the surrounding sentences omit them. They decide to name us (reader

stand alone) to form a longer sentence: "looking at *grief*..." The verb "looking," nominalized into the gerund, again acts as a noun. It offers us a location for revision. We may revert it back to its active state: **we look** at *grief*. But, we can take the active voice even further by adding another personal pronoun before, "is extremely useful to **us**." The prepositional phrase "to us" now indicates the recipients of who "considering" is useful for. Otherwise, the actors involved behind the word "considering" are absent, even though it would be implicitly known if the following "we" were to be added. *Sheesh!* Did that make sense? All this computational grammar-talk only goes to show just how multidimensional the construction of active and passive phrasing can really be. It also proves that there are so many options available to us in writing that help us manifest our written identity, even if only subtly.

and author) under a pronoun (in this case, “we”), but only do so three other times in the rest of their papers (including one instance for Student 2 where the pronoun is part of a quotation). It would then make sense to name themselves and their readers elsewhere— even if we implicitly know that it is us doing the “looking” or “understanding” together. For instance, the above phrases can be transformed in so many different ways, including:

- 1) In this project, **I** aim to look...
- 2) In this paper, **I** aim to provide us...
- 3) Considering those... is extremely useful when **we** look at *grief*...
- 4) By looking at Claudius... **we** can understand the *depth*...

These revisions work together to properly build cohesion on a textual and tonal level; Student 2 and Student 1 take charge of their own claim, and a true sense of conviction is foregrounded throughout. Additionally, the noun phrases, “this project” or “this paper,” could even be removed for added emphasis. For further clarification, take a look at this excerpt from Student 4:

If contemporary environmental conservation efforts are to be inspired by or rooted in the aesthetics of nature, then (EP) **the dominance of Eurocentrism and colonialism must be addressed**. It is essential that (EP) **these ideas be explicitly and critically explored** within and outside of the field of environmental aesthetics, and should be offset, if not replaced, by the breadth of indigenous knowledge and

philosophers who present similar norms of reciprocity and relationship with the land. It is evident in the environmental degradation and crisis (AV) **we are experiencing** that colonial and Western conceptualizations of land have failed (AV) **us**, but (AV) **we are not lacking** knowledge or sustainable practices. (IP) **There is hope to conserve** the climate and implement sustainable practices, and (EP) **it is found** within the philosophies and understandings of land that indigenous communities practice (166-167).

In the closing paragraph of his paper, Student 4 makes it known that the environmental crisis she discusses is one being experienced by all of us, under the pronoun “we.” This move positions her audience on the inside of not just her text, but within the importance of her topic of discussion. With this, it becomes apparent that “we” are affected by the crisis, its current state has failed “us,” and that “we” possess the ability to enact change. However, because Student 4 aims to build urgency and hope in her closing remarks, it will be of use to also consider the structures of the surrounding sentences. For instance, starting instead with “**we** must address the dominance of Eurocentrism and colonialism” and “it is essential that **we** explicitly and critically explore these ideas” pre-establishes the exigency of what we are involved in only a sentence later, centering us even deeper into the call to action. Stylistic words like “must” and “essential” emphasize the urgency on their own, but the weight that they bring will land harder once attached to an actor; if “we” denotes us as the individuals experiencing the crisis, then it is “we” who must address it, too.

Raising our students' awareness of the many available linguistic options is important not just for re-orienting personal voice to the forefront of our writing, but also for recognizing that voice is an option in the first place—and for understanding its importance in building a text. The last student of my corpus produced a particularly interesting paper. Student 5 had only 17 passive phrases (seven above Student 3 [the lowest] and 19 away from Student 1 [the highest]), yet he only had zero Active Phrases (four away from both Student 1 and Student 2). In terms of coding, his paper felt the most “vacant,” evident in the results I yielded. In fact, some of the phrases I coded felt like a stretch. A few were even removed after later revision, while others remained to mostly emphasize my purpose of having options. Nothing was particularly striking save for several instances where Student 5 instructed his audience, distantly, to do something:

(EP) However, **Stevens should not be read**...

(206)

(IP) **It is important to note**... (208)

(IP) **It is important to note**... (214)

(IP) **It is noteworthy**... (214)

The vacancy of voice, however, was of interest to me—that Student 5 perhaps did not recognize it as either an option nor a necessity. How does he position himself as author? Us as reader? The infrequency of even passive phrases, however, nevertheless helped to create that same impersonal, objective tone that partners with passivity. While a well-crafted paper that successfully argues its meaning, the actors involved are seldom present, also creating a one-dimensionality that refuses

to reference where the meaning is coming from or arriving to.

We can contrast the above examples of impersonality with Student 3's paper. Here, she makes it immediately known that *she* is the writer of her paper, entering herself into a larger conversation of scholars, and that *we* are her readers, even if the topic be unfamiliar to us:

(AV) Within the scope of this paper, **I present a highly focused study**... (74)

(AV) It is important to note that in this paper, **I address *Orientalism***... (78)

(AV) ...**I will examine the Bullerswood carpet**... (80)

Student 3 knits a body of personality throughout her paper, establishing her authorial identity through usage of personal pronouns and the active voice as Hyland vouches. The only location of her paper that took on a particularly passive tone was her abstract, where the passive phrases felt intentional, purposefully molded towards objectivity and distance to discuss an overview of her paper—an interesting choice that nevertheless demonstrated her ability to fully assess and utilize the two voice constructions. Thus, Student 3 is seemingly aware of the linguistic options available to her, and given that the rest of her paper favors an active tone centering herself and her audience, the choice to use the active voice feels like just that—a choice.

Conclusion

The purpose of my analysis is not to critique students on their grammar and prescribe them the “right”

tools. Rather, it is to open up our writing practices to allow moves that refocus our personal voice. Because, first off, none of these practices are inherently *bad*. The English language is a fascinating yet confusing entity, as I am sure you've now noticed. But given that a vast range of shades, features, characteristics, and traits make up our language (and any language, really), we should strive for a writing that broadens our horizons to encompass all of those linguistic elements, and *especially* those that re-center writers and readers alike.

The passive voice is a perfect example of where this revision can begin. While my research initiative focuses on this construction, the passive voice is grammatically correct and sometimes even necessary or useful. The passive voice can help us avoid redundancy, like when the actor is implied or was elsewhere mentioned. It can also help us put emphasis on an object that is more important than the subject. And overall, the passive voice brings an objective tone. Really, it's nearly impossible to write a (good) paper and *not* use the passive voice. It can be found even here, in this very sentence. However, there is such a thing as a passive "overdose." Our writing risks clarity when overly saturated with this distance. And when built consistently throughout a paper, the passive pushes readers and writers to the outside. More specifically, when the actor in a sentence goes missing, it becomes confusing as to where the action is coming from or where it's going. A paper begins to hang heavy when laced with meta-commentary that does not include the commentators. It becomes stale when the action itself is only present conceptually, with a slight implication of from whom it is arriving. When overdone, the passive voice encourages wordy writing, inviting us to lose

touch with what's transacted in a sentence. Put another way, readers, as members of your audience, are prone to getting lost—especially with an unfamiliar topic—and ought to be tasked with little analytical work of their own. That's *your* job. While your reader is an important party to consider, it is equally crucial to reflect on your own place as the writer. Is there an invisible force that pushes us away from self-conviction? Why?

The student writing I observed in *The Drew Review* were all distinctly well-written, successful essays, but on the topic of voice and identity, each paper did demonstrate room for potential revision choices. My purpose for this research was not of correction, but to offer possible pathways to re-orient this voice and identity within the plane it had previously inhabited. In doing so, our consciousness is raised to those linguistic tools that are, and have always been, available to us in writing. There is room for us to revive a sense of personality within academic writing that can often seem rigid, dull, or structured. And we will do it effectively and directly by naming ourselves and our readers, actively, within our prose.

Implications For Further Research

It is important we consider the reasons behind the writing choices that students make. I believe that students are influenced by external factors, such as teachers, professors, parents, peers, and academia as an institution, to make the linguistic moves that they were seen performing. That is, the “invisible force” pushing students away from self-conviction may not be so invisible, but rather, an internalization of standard modes of teachings accumulated throughout their years in education. For instance, was not naming himself or his

reader a stylistic choice of Student 5? Or, was this a move that was *subconscious* in nature? The same could be asked of Student 3: why or how did she favor usage of first-person pronouns? These questions suggest a possible enculturation process, to the “appropriate” ways of academic writing, that unravels throughout a student’s path to literacy. Of course, these questions were far out of the scope of my own research. It is still vital, though, that we understand how many of the above observations do not imply the attribution of blame to the students themselves. Instead, my study that questioned “What?” opens up space to now question “Why?” Therefore, for future research, we might investigate the perspective of educators. What do *they* think about personal pronoun usage in academic writing? “Re-Orient Your Self in Writing: Examining the Passive Voice Construction in *The Drew Review*” is a mere piece of a very large puzzle.

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Revitalizing Classic Literature Through Digital Platforms: A Case Study of “Insta Novels”

Janelle Campos

Abstract

In 2018, the New York Public Library (NYPL) launched "Insta Novels," an innovative campaign that adapted classic literature into Instagram Stories. This initiative sought to revitalize interest in these works by transforming their perception from inaccessible and outdated subjects to engaging, accessible, and relevant for 21st-century readers, presenting them in a visually appealing and easily digestible format. By reimagining classic novels through Instagram stories, the NYPL aimed to increase engagement and promote their relevance to a contemporary audience accustomed to digital consumption. While the campaign achieved notable success in expanding the library's social media presence, fostering user interaction, and increasing readership, it also drew criticism regarding the potential for oversimplification of complex literary works and the underutilization of Instagram's interactive features. This paper examines the intersection of technology and literature, exploring both the potential of digital platforms to broaden access to classic literature and the concerns surrounding the authenticity and depth of these works in a digital format, while also considering the evolving ways in which audiences interact with and

interpret classic texts in the digital age and highlighting varied perspectives on the campaign's effectiveness and implications for literary culture. Ultimately this paper seeks to demonstrate the potential of social media to cultivate interest in these works and effectively bridge the gap between classic texts and contemporary readers.

Introduction:

Classic literature refers to literary works that have been regarded as influential and noteworthy, allowing them to remain relevant in modern society. Tracing back to ancient civilizations such as Greece and Rome, classic literature has continued to present stories that generate thought-provoking ideas while exploring the human experience. However, in our contemporary digital age, characterized by technological advancements and shifting cultural norms, the consumption of classic literature has faced challenges. One major challenge is the perception of classic literature as inaccessible. This inaccessibility can manifest in various ways, including limited access to physical copies or digital formats, educational limitations, complexities in content, or lack of understanding of cultural or historical references. Due to this inaccessibility and digital media platforms growing in relevance and appealing to more people, traditional forms of reading, including classic literature, have become less appealing to contemporary readers. In acknowledging “inaccessibility” as a prominent issue, various questions still remain: How can we make classic literature more accessible to modern readers? Why should we invest time and effort in making these works relevant to contemporary audiences?

To address this challenge, the New York Public Library (NYPL) launched the "Insta Novels" campaign. The NYPL is a distinguished public library system in New York City. Established in 1895, it is home to a vast collection of over 53 million items, making it one of the largest libraries in the world. With 92 locations spread across the Bronx, Manhattan, and Staten Island, the

NYPL offers a wide range of resources and services to the public, including books, magazines, digital materials, and research facilities. In recent years, the library has utilized digital technologies to expand its reach and engage a broader audience.

The "Insta Novels" campaign aims to reimagine classic literature for a digital audience by adapting iconic novels into visually engaging Instagram stories. By doing so, the NYPL attempts to modernize classic literature for those who view it as outdated, while also making it more accessible to readers who may not have otherwise read classic literature. Without this accessibility, we run the risk of losing our connection to not only the past but the world around us. Classic literature not only presents a mirror of the past but also reflects the very human experiences we face in the world today.

However, while "Insta Novels" were designed to provide an innovative way to engage with classic literature, the campaign has been met with criticism for its simplification by audiences and academics alike. A major concern raised is why there is such a push for these novels to be adapted to fit a contemporary audience. Noa Shakargy, a main critic of the campaign, echoes these concerns by challenging the campaign's purpose in revitalizing classic literature, ultimately refuting the need for such adaptations. As a result of this counterargument, a fundamental question is raised: despite these novels' perceived complexities, shouldn't well-regarded stories be enough to get readers to want to engage with them without digital adaptations?

Therefore, my research aims to examine the potential of the "Insta Novels" campaign to promote engagement with classic literature on Instagram. In

order to do this, I will analyze the campaign's strategies and content, along with audiences' and critics' perceptions on this campaign. Overall, through this case study on the campaign, I propose that digital platforms can be utilized to promote interest in literary classics and bridge classic texts to contemporary audiences.

Decline of Classic Literature

Classic literature has a reputation for being complex and inaccessible, creating the notion that it belongs to the cultural elite or academia. Classic literature is often characterized by its maturity of language and cultural depth. T.S. Eliot, in his essay "What is a Classic," implies that a classic work demonstrates a mastery of language, allowing authors to express a wide range of thoughts and emotions comprehensively (13). This linguistic maturity often involves complex sentence structures and intricate period structures, reflecting a deeper understanding of the language's potential (16). However, these qualities that contribute to the timeless nature of classic literature have created significant barriers for contemporary readers. The linguistic and cultural nuances, often rooted in specific historical and social contexts, can be challenging to decipher for modern audiences who lack the necessary background knowledge. This has led to classic literature being perceived as inaccessible and irrelevant to the 21st century.

Furthermore, traditional explanations for literature's decline have been focused on internal factors within academia, such as institutionalization, compartmentalization, and evolving critical perspectives. However, Mohammed Albalawi, in "The Decline of Literature: A Public Perspective," argues that

public perception plays a significant role in the decline of literature. The increasing prevalence of digital distractions, such as phones and social media, further heightens this issue. Albalawi writes:

It is true that technology has dominated our lives—ironically was thought of as a means to make life easier. As a matter of fact, it has been used mostly to expedite our time—or to kill time in a common sense—without providing the expected benefits or even any kind of social values. (91)

As Albalawi suggests, technology, while initially intended to enhance our lives, has become a tool that has hindered the way we engage in activities. Therefore, our current digital culture has made it increasingly difficult to dedicate sustained focus to reading lengthy texts. The allure of instant gratification offered by social media and technology has diverted public attention away from traditional forms of literature—the inherent complexity of these works and the rise of technology have alienated contemporary readers. As a result, classic literature has often failed to capture a modern audience and thrive in the 21st century, leading to the overall decline of its readership.

Intersection Between Technology & Classic Literature

Technology, specifically digital platforms, has become increasingly prevalent in our modern society. With the evolution of such digital platforms and technological advancements, there is a growing concern about the extent to which they facilitate or impede the preservation of classic literature in the 21st century. In “The Evolution of Classical Literature in the 21st

Century,” Shayan Hashemi poses the argument that digital platforms affect classical works' authenticity, which in turn present challenges like superficial engagement and the risk of commercialization diluting the depth of classical works due to rapid consumption of digital content (Hashemi 2). In other words, there is this growing fear that digital platforms pose a detriment to the way we engage with classic literature.

However, Hashemi also encourages individuals to recognize the potential of digital platforms to revitalize classic literature. Digital libraries, social media, book blogs, and e-book platforms have made it possible for readers worldwide to access a collection of classical works easily while providing an engaging space for individuals to read classic literature. Through multimedia elements, such as interactive storytelling, these platforms can enhance the reading experience while also combating the ongoing decline of readership in classic literature. The interactive nature of digital technology also works to engage and bring readers to want to read classic literature. Platforms like online forums or virtual book clubs facilitate collaborative engagement and enable readers to connect, share insights, and engage in collaborative discussions (3). This communal aspect of digital reading enhances the overall reading experience and fosters a deeper understanding of classic texts. Hashemi's point is not to diminish concern raised by critics over classic literature's place in the digital sphere, but instead, he posits the idea that these digital platforms have opened a space in which readers can participate in reading culture. Specifically, the overall participation in readership contributes to engagement with classic novels that they may not have otherwise had the

opportunity to read due to traditional barriers imposed by the consumption of classic literature.

This shift towards digital platforms resonates with modern readers, who are likely accustomed to consuming content digitally, creating an interest in classical literature. As stated by Hashemi, "This ease of access has leveled the playing field, allowing individuals from all walks of life to explore and appreciate literary masterpieces" (3). Therefore, I believe digital platforms have democratized access to classical literature by deconstructing the traditional barriers of exclusivity and elitism surrounding classical literature, enabling a broader and more diverse audience to engage with these texts. These digital platforms effectively address the concerns raised by both Eliot and Albalawi regarding the decline in the readership of classical literature. Consequently, libraries like the New York Public Library have had to adapt to this digital age and create initiatives such as "Insta Novels" to provide "ease of access," as Hashemi points out. As literary reading declines and social media becomes a primary source of information, libraries are evolving beyond their traditional role of simply housing books. The NYPL is increasingly connecting communities to the web and transforming how the public can easily access books, especially classical literature.

NYPL “Insta Novels” Case Study Analysis

In 2018, the New York Public Library (NYPL) created a project to restore relevance and interest to classic literature for a new generation of readers. Teaming up with the creative agency Mother USA, the NYPL introduced “Insta Novels,” a digital storytelling format that utilizes Instagram stories to bring classic

novels to life. Featuring classic novels, short stories, or novellas, NYPL would upload each literary piece into Instagram “Stories,” complete with unique design elements, as shown below in figure 1. The Instagram-specific design included aesthetic visuals, animations, and a user-friendly interface that encouraged readers to interact with the stories in a new way, while also maintaining familiar elements like the use of serif fonts, similar to traditional printed books. The initiative behind the campaign was to encourage more people to read books by presenting classic stories in a more engaging format.

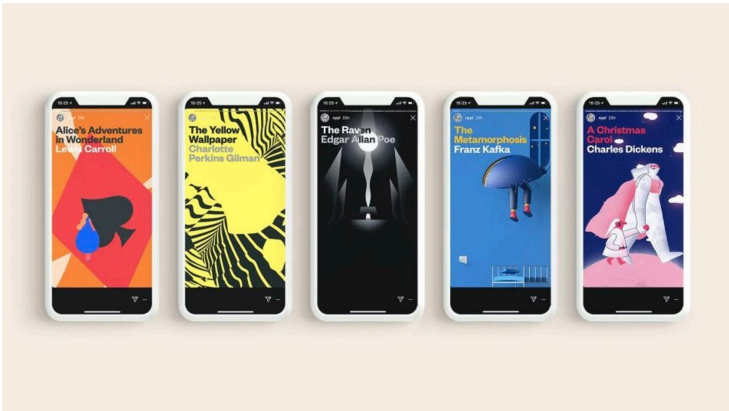


Fig. 1. Mother USA (@mothernewyork). “Collage of The New York Public Library’s Insta Novel Collection.” *YouTube*, March 2019.

The NYPL has so far adapted five classic works into “Insta Novels”: *Alice and Wonderland*, “The Yellow Wallpaper,” *Metamorphosis*, “The Raven,” and *A Christmas Carol*, as shown in figure 1 (Mother USA, 2018). Each Insta Novel is designed to be consumed

quickly and easily, with each page lasting only a few seconds. Readers rest their thumbs on the screen to hold the page, and as they lift their thumbs it "turns" the page; this is shown below in figure 2. The platform's interactive nature invites users to actively participate in the storytelling process, with a simple thumb gesture used to turn pages or trigger animations.

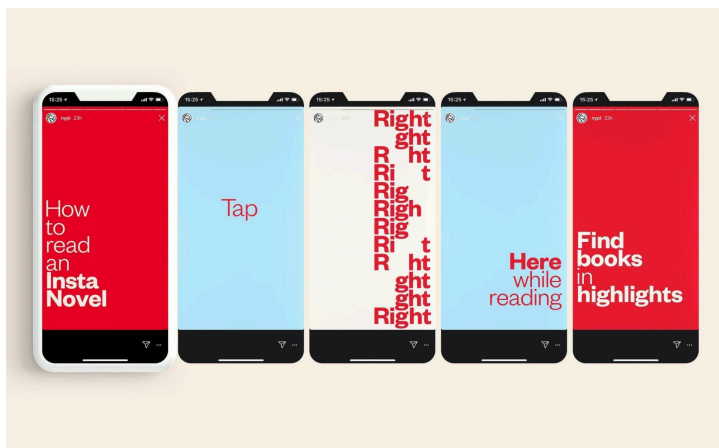


Fig. 2. Mother USA. Collage of “How to Read an Insta Novel” on @NYPL Instagram story highlights. *Instagram*, August 2018.

Each “Insta Novel” is saved as a work of digital literature that readers can access at any time through Instagram’s stories highlight, which can be seen below in figure 3. These highlights function as a digital bookshelf or e-book space, almost serving as a digital experience for those who may not be able to access a library; or, specifically the New York Public Library.

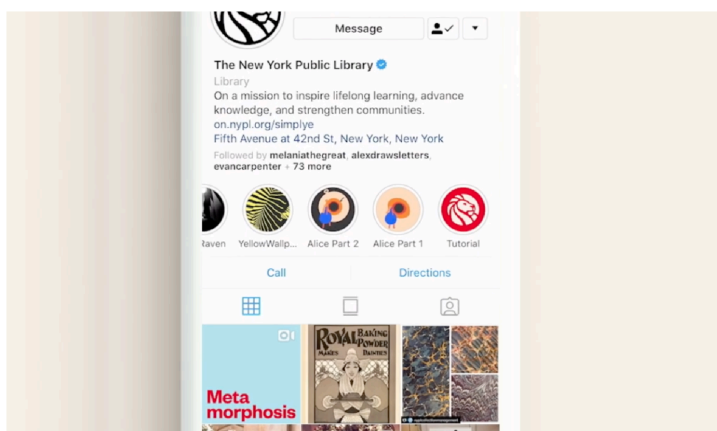


Fig. 3. Mother USA (@mothernewyork). Image of The New York Public Library's Instagram page and story highlights. *YouTube*, March 2019.

However, it is important to note that the last Insta Novel was posted about four years ago in 2019. Though the initiative was heavily promoted and a great amount of work had gone into it, the production of these "Insta Novels" has been paused as the NYPL takes on different projects, such as focusing on Banned Books and a new campaign titled "Missing Sounds of New York." Though there may be more that could have been done to make the campaign even more successful, the campaign nonetheless creates potential in providing a space where digital platforms and classic literature intersect. Instead of posing the two against one another, the campaign indicates there is a way for the digital age and literary world to be coupled together for the benefit of reading communities.

Findings

The launch of "Insta Novels" was deemed a resounding success by various critics and the library itself. As noted by Carrie Welch, the NYPL's Chief of External Relations, "This project is directly in line with the Library's mission to make the world's knowledge accessible to all. With the goal behind the initiative of encouraging more people to read books" (New York Public Library). With that being said, key metrics indicate the campaign had a significant impact on their social media platforms and readership of specific novels. According to NYPL's promotional video, the "Insta Novels" campaign increased NYPL's Instagram following by 155,000, garnering over 700,000 media mentions, and engaging over 300,000 users through interactive storytelling. An example of the interactive nature and the compelling visuals of these stories can be seen in figure 4.

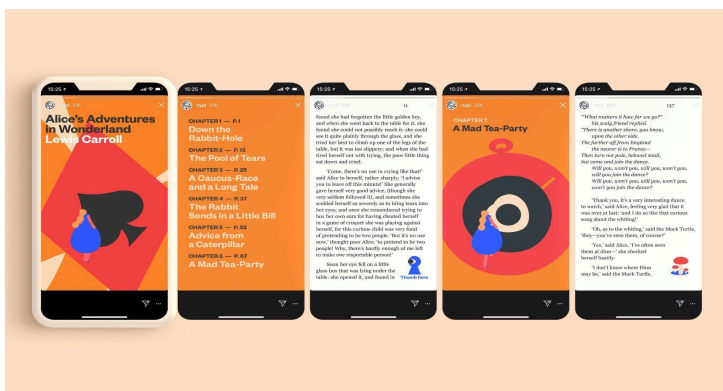


Fig. 4. Magoz. Excerpts of the @NYPL Instagram Insta Novel adaptation of Lewis Carroll's *Alice's Adventures in Wonderland*. *The One Club*, 2019.

The NYPL also noted they had seen an increase in readership of the novels they posted on their story with the example of over 40,000 readers having completed *Alice's Adventures in Wonderland*. Additionally, NYPL "Insta Novels" won in three categories of the 2019 Webby Awards, including a People's Voice award in Best Use of Social Media. By launching digital adaptations of classic novels through Instagram stories, the library captured the attention of a wide audience, including those who may not have traditionally engaged with classic literature.

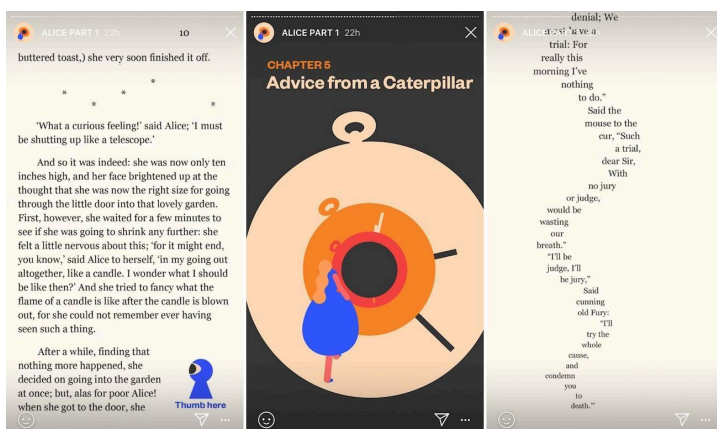


Fig. 5. Magoz. Typography and visual elements of @NYPL Instagram Insta Novel adaptation of Lewis Carroll's *Alice's Adventures in Wonderland*. PCMag, August 2018.

The success of “Insta Novels” can be attributed to several factors, including their visually appealing format, concise storytelling, and interactive elements. By breaking down complex narratives into digestible segments and incorporating multimedia elements like images and videos, the NYPL made classic literature more accessible and engaging for a contemporary audience. For instance, the “Insta Novels” adaptation of *Alice's Adventures in Wonderland* effectively utilized visual storytelling to enhance the reading experience. As seen in figure 5, the text itself is transformed into a visual element, mimicking the shape of a caterpillar, which represents the iconic character. This creative use of typography draws the reader's eye, leaving readers, much like myself, wanting to continue reading the rest of the stories in hopes of seeing more visually intriguing examples. The intentionality of this post also sticks out,

and there is a reason behind the visual elements that are employed in all of the “Insta Novels,” especially in this specific chapter. The reasoning behind the caterpillar is intended to closely align with the chapter's plotline of Alice's interactions with the caterpillar. Beyond sticking to the plotline, the whimsical and childlike nature of the novel itself is reflected by the way the NYPL presents the book in the “Insta Novels,” through bold colors, playful typography, and imaginative illustrations. These elements capture the essence of Lewis Carroll's original text and create a visually engaging experience that appeals to audiences.

However, many individuals in the general public also disapproved of the NYPL's initiative behind the campaign. For example, when the NYPL announced the creation of “Insta Novels,” they posted a YouTube video launching their campaign initiative. While there was an overwhelming amount of supportive comments, one commenter under the user @modulator7861 said, “Great designs - but what a sad, shallow new way for folks to engage with great literature!” These criticisms highlight the limitations of digitally formatting these works. The pushback against interaction between classic literature and digital platforms attempts to demonstrate that this reimagination of classic texts may not fully capture the depth and complexity of the originals. These criticisms derive mainly from concerns about the need to adapt these novels to resonate with a contemporary audience. Despite classic literature's reputation for being elitist or complex, one would expect these renowned stories to stand alone, needing no digital adaptation for readers to interact with them.

In fact, various critics have opposed the mission of the campaign and have raised potential consequences of "Insta Novels." In his essay, Noa Shakargy writes:

"Insta Novels" did not compete with the book or other versions of the classics: it merely chose a new platform to perpetuate it. The use of the platform was mainly metaphoric, and did not take advantage of Instagram's affordances or speak the language of its users. (9)

Here, Shakargy suggests that the campaign, despite using a new platform to promote classic literature and broadening it from the traditional way of engaging with texts, did not truly adapt to the medium. Instead of leveraging Instagram's features and notably engaging its users, specifically through the overall interactive nature of the platform, the NYPL simply copied the original formatting of the text without significantly adapting it to fit this new digital medium. This approach failed to capitalize on the platform's potential and missed an opportunity to connect with a younger audience in a meaningful way. However, I disagree with Shakargy's argument against the "Insta Novels" campaign. The diverse range of audience interpretations and potential for unexpected engagement are left out of consideration in his argument. This can be linked to Stuart Hall's "reception theory," which posits that the meaning of a text—in this case, the "Insta Novels" campaign—is not fixed but is constructed by the audience. Different individuals interpret the same text in different ways, based on their own cultural, social, and personal experiences. In the context of my argument, Shakargy's claim that the campaign "failed to capitalize on the platform's potential" is based on a misunderstanding of the campaign's intent and its potential impact on its

target audience. Shakargy's negative assessment is a result of his own interpretation, rather than an objective evaluation of the campaign's merits. Though one may argue the scholar is part of the audience, this doesn't invalidate the concept of reception theory. The campaign's success or failure should not be solely judged based on its adherence to specific platform norms.

While the NYPL produced five novels into "Insta Novels," one of the most striking examples is their adaptation of Franz Kafka's *The Metamorphosis*. This adaptation of the acclaimed novel was particularly well-received by the public. A short promotional video posted on Instagram featured a visually striking animation of the title *Metamorphosis* "morphing" into different words, accompanied by upbeat music and a call to action to view the full story on Instagram Stories, which can be seen in figure 6.



Fig. 6. Pelizer, César. @NYPL's Instagram post promoting its Insta Novel animation of Franz Kafka's

The Metamorphosis. The New York Public Library,
December 2018.

The animated post in figure 6 received more than 100+ likes with 19 comments. One Instagram user, “austsharma”, commented:

@nypl the "Insta Novels" are a great idea! They help me catch up with my "Oh I have to read that story / novel / poem" list in quick doses, in time I would have spent on the 'gram anyhow. Great work by the team!

Here, it is evident this post garnered significant attention and positive feedback from various users praising the innovative approach to showcasing these literary works. Through this Instagram user’s comment, it is indicated that the visually captivating post was able to draw readers in and bring excitement to readers or followers of the library. The user also makes note of how this campaign has personally been helpful in the way they consume novels, explaining that they were able to engage with texts they had been meaning to read.

Discussion

In an era dominated by contemporary digital content, the NYPL capitalized on the contemporary audience's acceptance of technology to promote classic novels. This approach allowed the project to invade the digital landscape and connect with a diverse audience, which in turn presented classic literature in a new and innovative format. The NYPL utilized literary works primarily from the 19th century, with the exception of *The Metamorphosis*, published in the early 20th century.

By selecting these particular works, the NYPL highlighted their significance to the literary world and potential for contemporary relevance. These classic stories, having achieved canonical status, were deemed worthy of revitalization for contemporary readers. The choice of these classic novels also emphasizes their inherent storytelling and visual potential, highlighting the fact that these texts lend themselves well to adaptation for a digital medium. This suggests that these timeless narratives can withstand the development of factors that seem to hinder the readership of classic novels, such as the rise of technological advancements.

While reading is often considered a solitary activity between a reader and the novel, reading and engaging with written text thrives on social interaction. Digital platforms provide a space in which discussions on novels within reading communities can come to life. As Nancy Foasberg writes:

Reading communities, then, include three elements: a social element deriving from discussions among the participants, a reading element deriving from the choice of works read and the types of discussion that are valid within the community, and the achievement-based, 'commoditized' element. (34)

As Foasberg points out, reading communities are characterized by social interaction, and online platforms like Instagram provide a space for such discussions. Therefore, since Instagram has this inherent ability to foster a collaborative reading community, the concept behind the "Insta Novels" campaign has provided new avenues for readers to connect, share their thoughts, and engage in discussions about books.

Shakargy, on the other hand, poses the potential consequence created by this campaign. He argues that this campaign has oversimplified and diluted classic texts. This fear, as stated previously by critics, such as Hashemi, stems from the idea that technology and classic literature may not be able to interact with one another in order to preserve and offer the complexities of engaging with classic literature in a traditional manner. This is further reinforced by Shakargy arguing that the NYPL ultimately failed to create a meaningful and engaging digital experience for classic literature. He claims that the Insta Novel format inadvertently reinforced the perception of classic literature as irrelevant and outdated. Additionally, he argued that the Instagram format, due to its fast-paced nature, did not fully capture the depth and complexity of these works due to the fast nature and construction of Instagram Stories in itself. In his essay, Noa Shakargy writes:

The library tried to reach millennials by placing the project as an expression of the brand's 'higher purpose'—reading books for free. It is implied that, due to its nature and values, NYPL is forced to encourage reading. Still, making reading a necessity by offering chunks of text that can only be read or ignored may deter Instagram users from the project and, therefore, the library, too. (10)

Shakargy's critique of the "Insta Novels" campaign offers the potential implications that Insta Novel creates when producing digital adaptations of classic literature, specifically on a platform like Instagram, which is known for its fast-paced structure. His argument is rooted in the concern that such adaptations may compromise the integrity of the original texts and

diminish their cultural significance. By breaking down lengthy narratives into short, easily digestible segments, the campaign risks oversimplifying the original texts, which may lead to these classic texts being misinterpreted. Similarly, the focus on digitizing these novels for contemporary readers seems to perpetuate the stereotype that classic literature is dull or irrelevant, a stereotype that has been promoted with the decline of classic literature as a whole. The campaign could work against its purpose of revitalizing classic literature by producing these literary adaptations; it poses the notion that even though classic literature is so important and well regarded, it needs to be digitized and visually adapted to captivate readers.

I must, however, point out that Shakargy's argument is countered by Foasberg and Hall. Shakargy may have viewed the "Insta Novels" as a dilution of classic texts, driving a need for people to view libraries as useless; however, the role of the audience/reader is an essential factor to take into consideration. In conjunction with "reading communities," Foasberg's understanding of these communities shaping the text and how we interpret them connects back to reception theory. From the way media can be understood, specifically the way digital platforms function, Instagram has always been a space in which people can actively communicate and interact with each other—it is primarily the audience, which in this case are the reading communities, that create meaning from the text. Ultimately, whether a text is perceived as oversimplified is determined by the reader's individual interpretation. My experience as an active participant in the "Insta Novels" community offers a concrete example. I found that the campaign did not hinder my understanding of classic literature; rather,

it sparked my interest and encouraged me to delve deeper into the original texts. This suggests that at least for some readers, the campaign did not oversimplify but instead enhanced engagement. This is not to say that the campaign was perfect, but it represents a valuable step in making classic literature more accessible.

Despite these criticisms, the campaign has raised important conversations about the role of digital technology in shaping literary culture. By inviting readers to engage with classic texts that step away from the traditional consumption of novels, the NYPL has challenged traditional notions of reading and interpretation. Ultimately, the success of a literary work, whether classic or contemporary, depends on its ability to resonate with readers. As Beth Driscoll suggests, the reading public plays a crucial role in shaping the reception of a book. She writes, “The reading public—common readers, popular reviewers, and high-brow critics—form their own critiques of a novel, in praise or in denunciation of its content, its form, or its perceived intent” (429). Here she posits that readers, regardless of their background, play a crucial role in shaping the reception and ultimately the success of a book. Therefore, the “Insta Novels” campaign, by encouraging active engagement and critical thinking, has empowered readers to form their own interpretations and contribute to the ongoing conversation about classic literature. An example of this can be seen through an Instagram comment left by user @arabesks. This user wrote: “Thank you so so much NYPL for featuring this story!!!! It could not be more important to read ‘The Yellow Wallpaper’ in the current atmosphere of US government/politics.” Here, the commenter demonstrates how the campaign has inspired readers to

connect classic literature to contemporary issues. It is especially important to note that this comment was published a year before the 2020 election, a time when discussions about political issues such as women's rights were at the forefront of public discourse. By highlighting the novel's themes such as female oppression and mental illness, the campaign encourages readers to reflect on how classic novels maintain relevance and often mirror prominent issues in today's society.

Similarly, in the first announcement introducing the campaign, user @relli_zakheim commented: "I'm an English high school teacher. Thanks for this great initiative, I'll start the new semester by recommending it to my students!" This highlights how the campaign has created an engaging space for younger readers while also effectively driving classroom discussions on the novels themselves. By presenting classic literature in this way, the campaign has encouraged students to connect with the text on a personal level and participate in broader literary conversations while simultaneously appealing to the student by utilizing Instagram, a medium most young students are familiar with. Thus, the success of this initiative ultimately lies in the hands of the reading public, who have the power to shape the future of digital literacy experiences.

Therefore, the campaign has offered its followers a unique and engaging way to experience classic literature. By leveraging the popularity of Instagram and its visually appealing format, I believe that the NYPL has effectively revitalized classic literature, while effectively promoting and preserving the enduring relevance of these novels. Despite the claims made by various scholars, I believe that the

campaign did capture a degree of depth and complexity of the original texts, further opening up new avenues for literary engagement and interpretation.

Conclusion:

The "Insta Novels" campaign represents a significant step towards bridging the gap between classic literature and contemporary audiences. By utilizing digital platforms, such as Instagram stories, the NYPL has successfully reimagined classic texts, encouraging readers to further interact with classic texts. By launching classic novels that already contain imaginative illustration components and placing them into the Instagram Stories format, the NYPL has been successful in driving readers toward classic literature. Furthermore, this campaign highlights the importance of considering how classic literature can be adapted to align with digital platforms. By selecting a platform like Instagram, which is visually driven and interactive, the NYPL was able to effectively engage with a broader audience on a wider scale. Additionally, these modern retellings of classical texts make them seemingly more relevant to new audiences by not just providing a way for users to stay more engaged, but by providing an interesting reimagination of a notoriously difficult genre.

Future research could investigate the effectiveness of different digital platforms and formats for delivering classic literature. Would a TikTok adaptation of a classic novel be equally successful in engaging young audiences? By utilizing digital platforms, libraries and publishers have the opportunity to connect with new audiences and drive them to start reading classic works. Therefore, the "Insta Novel"

campaign further suggests a promising future for the reading of classic literature in the digital age.

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Improving Polycystic Ovary Syndrome Care: Elucidating Reasons for Patient Treatment Dissatisfaction and Low Rates of Diagnosis

Jacquelyn Dal Bon

Abstract

Polycystic Ovary Syndrome (PCOS) is a common female endocrine condition with critical implications for systemic health, including infertility, insulin resistance, and cardiovascular disease (Patel 2018). Yet, it is estimated that 70% of affected people remain undiagnosed worldwide (WHO 2023). Furthermore, diagnosed patients report poor treatment and care satisfaction. Literature research and stakeholder interviews with professionals in PCOS care were conducted to deduce drivers for these poor outcomes. Key challenges in PCOS care include patient miseducation about the nature of PCOS's causes, over-specialization of care, variation in provider attitudes of diagnostic criteria, and barriers in adolescent diagnosis. Treatment satisfaction in PCOS is burdened by a lack of comprehensive treatment options. To improve patient outcomes and diagnosis, providers should prioritize individual patient concerns and education. Diagnostic criteria should expand to include non-reproductive symptoms to mitigate over-specialization and expand the number of providers who consider PCOS during differential diagnosis. Given

the significance of PCOS symptoms and its high prevalence, improving care and diagnostic efficiency is crucial.

Introduction

Medicine and research have often overlooked the female body, leading to higher rates of chronic diseases, medication side effects, and misdiagnosis in women/those assigned female at birth.¹ This disparity likely originated from the CDC's longstanding recommendation that women not be included in clinical trials. While the inclusion of women and minorities in clinical trials was mandated in 1993, gender and sex equality in healthcare still lags behind (Balch 2024). Women are 52% more likely to have adverse drug reactions and 29% more likely to die as a result of them (Rademaker 2001; Wilson and Nakagawa 2022). Considering this deadly gender gap, it is concerning that female-specific non-oncological conditions, such as endometriosis and menopause, were allocated only 1% of the funding in scientific research and development in 2022 (Moley 2024). Given the historical ignorance towards research in female reproductive health, the current lack of funding allocated to female-specific conditions, and the relatively poor health outcomes common to female individuals, it is critical to investigate the conditions which divide this 1%. One such condition is the common endocrine condition Polycystic Ovarian Syndrome (PCOS). Investigation into PCOS care contributes to knowledge gaps in female healthcare as a whole.

¹ The terms “woman,” “female,” and “people” are interchanged when referring to PCOS populations, with a preference for gender neutrality when literature does not identify the gender of participants. People who identify differently from their assigned gender at birth also suffer from PCOS, and their identities are not ignored. Notably, in some studies, transgender men were found to be more likely to suffer from PCOS, regardless of their potential use of gender-affirming hormone replacement therapy (Liu et al. 2020).

Strategies were taken to explore causes of poor PCOS care satisfaction and methods to enhance patient experience. PCOS is a common endocrine condition considered by patients and physicians alike to be very complex, with high rates of patient dissatisfaction and low rates of diagnosis. For example, 67.5% and 52.6% of women with PCOS report feeling dissatisfied with their PCOS care and diagnostic experience, respectively (Huddleston et al. 2024). Experts, including an OBGYN PCOS specialist, a medical director in pharmaceuticals, and a head nurse overseeing care in metabolism and endocrinology, were interviewed to explore first-hand experiences in patient treatment and communication. Literature research was conducted to deduce what factors contribute to high rates of dissatisfaction in this condition. The main drivers of PCOS patient dissatisfaction and underdiagnosis were found to be misrepresentation of the syndrome, over-specialization of care, diagnostic inconsistencies, and a lack of comprehensive treatment options. To improve these outcomes, providers should combat misrepresentations of the condition, recognize non-reproductive risk factors in PCOS diagnosis, and consider each patient's needs holistically.

What is PCOS?

Recognizable PCOS symptoms include ovarian cysts, dysfunctional menstruation, weight gain, male-typical facial hair, and cystic acne. As mentioned above, PCOS exacerbates the susceptibility to various significant health complications, including early onset cardiovascular dysfunction, mental illness, a tripled risk of miscarriage in early pregnancy, and type II diabetes

(Patel 2018). Despite these concerns, 70% of those with the syndrome remain undiagnosed worldwide, and patient treatment satisfaction is poor (WHO 2023; Huddleston et al. 2024).

A large barrier to PCOS treatment is the complexity of its mechanisms, as the syndrome has been linked to endocrine, metabolic, genetic, and evolutionary origins (Patel 2018). People with PCOS present with two of three diagnostic symptoms: cysts in the ovaries, elevated male-typical hormones, and dysfunctional ovulation. Variability in which of these symptoms patients experience creates different PCOS phenotypes.

PCOS is most closely associated with dysregulation of the hypothalamic-pituitary-ovarian hormonal axis (HPO axis), leading to atypical function. The HPO axis allows hormone-secreting structures in the brain and pituitary gland to communicate with the ovaries, maintaining homeostasis and conducting reproductive functions. Under the HPO axis, the hypothalamus releases gonadotropin-releasing hormone (GnRH) in a pulsatile manner (Hackney and Davis-Wilson 2017). Based on this pulsatility, the anterior pituitary gland releases luteinizing hormone (LH) and follicle stimulating hormone (FSH) in a certain ratio in order to influence ovarian function. Broadly, LH controls the ovarian secretion of sex hormones, while FSH controls the development of an egg cell. Both impact the menstrual cycle, and their ratio changes predictably to facilitate reproductive function. PCOS dysregulates the ratio of LH to FSH, with LH levels remaining too high and FSH levels too low (Patel 2018). Under these hormonal conditions, ovulation does not occur. Therefore, the egg cell does not leave the ovary, becoming a fluid-filled cyst.

The second most well-elucidated dysregulation in PCOS is its impact on metabolism. PCOS and metabolic abnormalities (insulin resistance and hyperinsulinemia) are linked, and researchers estimate that 75% of people with PCOS have some form of metabolic abnormality (Moggetti and Tosi 2020). The relationship between metabolic syndrome and PCOS is bidirectional, meaning that metabolic dysfunction can cause PCOS symptoms and PCOS can cause metabolic abnormalities. Providers may find difficulty discerning if metabolic or endocrine triggers are causing symptoms in patients due to confounding factors such as feedback mechanisms, inflammation, oxidative stress, and the heterogeneous nature of PCOS.

Many mechanisms of the bidirectional relationship between metabolic issues and reproductive issues in PCOS are known. The high androgen levels in PCOS impair insulin action, reduce insulin degradation, and impede fat breakdown (Moggetti and Tosi 2020). Furthermore, people with PCOS who have typical androgen levels usually do not have metabolic symptoms common to the syndrome (Le et al. 2012). Conversely, metabolic abnormalities can promote the formation of PCOS symptoms. This is not consistent throughout the PCOS population, as drugs for insulin resistance (IR) (for example, Metformin) do not alleviate PCOS symptoms in all patient populations (L. Pal, M.D., video call interview, April 5, 2024). In PCOS patients, insulin is shown to decrease the synthesis of sex hormone binding globulin (SHBG), which inactivates hormones via binding interactions and controls endocrine homeostasis (Moggetti and Tosi 2020). Because hyperinsulinemia suppresses SHBG production, high androgen PCOS can be caused by this condition (Nestler et al. 1991). High levels of insulin are also associated with high levels of LH due to an

unknown mechanism (Moggetti and Tosi 2020). Considering these mechanisms, the high comorbidity of PCOS and metabolic abnormalities, particularly insulin resistance, is understandable.

These metabolic symptoms of PCOS are known to originate genetically. PCOS is inherited through multiple genetic traits rather than one known genetic mutation. First-degree female relatives of those with PCOS have a 61% chance of having symptoms, and males have a 22% chance. While males do not share the reproductive consequences of PCOS, male relatives of PCOS patients exhibit atypical androgen and metabolic phenotypes (Govind et al. 1999). Certain polymorphisms, or variations in gene sequences, have been linked to the presentation of PCOS symptoms (Patel 2018). It is hypothesized that PCOS is genetically inheritable via high anti-Müllerian hormone (AMH) expression in female parents. This hormone inhibits the formation of female sex organs during the sexual development of males (Moggetti and Tosi 2020). Studies show that female individuals with PCOS have longer clitoral and labial lengths than those who do not. This association was supported by a 2016 study which identified this trait in 99.9% of the PCOS patients (Köşüş et al. 2016). Considering hyperandrogenism is not present in all PCOS phenotypes, but distinct genital phenotypes are very common, it is unclear if these changes occur developmentally as a result of higher AMH levels or through another mechanism.

Considering its inheritability, PCOS is hypothesized to have provided early humans a Darwinian advantage known as the “fertility storage condition” (Patel 2018). It is thought that symptoms of PCOS, mainly high androgens and anovulation, provided an advantage to prehistoric female individuals; elevated testosterone levels would facilitate accelerated muscle

growth, and dysfunctional fertility would make the dangerous and taxing processes of pregnancy and labor more rare. Furthermore, the ability to prevent ovulation might suggest an effort to ration the body's non-renewable supply of viable egg cells. PCOS could have provided an advantage during stressful events, as mechanistically, stress-related adrenal steroids and inflammation exacerbate PCOS symptoms. This could have provided "fertility storage," or birth control, at times when individuals were unfit to manage pregnancy. These hypotheses support potential Darwinian reasons for PCOS's genetic inheritance, but they are less supported than the other biological mechanisms outlined above.

Considering that hormone function is interconnected with all body systems, PCOS has the potential to impact each facet of a person's health. Risk factors span from an increased risk of gum disease to a tripled risk of miscarriage (Patel 2018; NIH 2017). Given these health consequences, the low diagnosis rate of PCOS is concerning. Furthermore, women with PCOS report significant delays in diagnosis and dissatisfaction with treatment (Gibson-Helm et al. 2016). Contributing factors to these barriers were explored via interviews with PCOS experts.

Findings

Misrepresentation of the Syndrome

According to Dr. Lubna Pal, director of the PCOS program and Professor of Obstetrics, Gynecology, and Reproductive Sciences at Yale University, "PCOS is not a planet, it is a nebula." Often, scientific articles accessible to patients refer to the cause of PCOS as "unknown" and "unclear" (Cleveland Clinic 2021; Johns

Hopkins Medicine 2019; Mayo Clinic 2022). However, this is a misrepresentation of the syndrome, which is a common grouping of symptoms with many possible causes rather than a disease with a singular mechanistic trigger (L. Pal, M.D., video call interview, April 5, 2024). As outlined above, the systems that cause PCOS symptoms impact the whole body and often work via interconnected feedback loops. This means that a plethora of mechanistic issues can cause the same symptoms. In Dr. Pal's practice, a barrier arises when patients enter looking for the singular cure for their PCOS, not realizing that the symptoms and potential causes of the syndrome vary greatly from person to person. She explained, "Patients are frustrated because they are looking for one answer, one treatment, and there is no [one treatment]. You treat the underpinning [mechanism] or you mask the clinical presentation." PCOS is heterogeneous and encompasses a broad range of different phenotypes with many mechanistic origins. Considering this disconnect between Dr. Pal's description of PCOS and the description given on patient-friendly websites, the syndrome's heterogeneity is not adequately communicated in patient-accessible media. This leads to incorrect patient assumptions that PCOS has a singular cause with a singular cure. This heterogeneous nature of PCOS also poses challenges in diagnosis, as providers debate accepted diagnostic requirements for PCOS.

Issues with Diagnosis

The complexity surrounding PCOS diagnosis stems, in part, from the inherent challenges encountered within primary care settings. Primary care providers (PCPs) refer patients to specialists when their conditions are outside the scope of general practice. In Dr. Pal's

experience, many unnecessary referrals occur in PCOS care. Considering PCOS is a diagnosis of exclusion, meaning providers must outrule other potential causes of PCOS symptoms before diagnosis, PCPs may not feel comfortable exhausting the breadth of all potential metabolic or endocrine dysfunctions without a specialist's opinion. In the opinion of Sree Madapalli, registered nurse and previous clinical supervisor of endocrinology and metabolic health at Atlantic Health System, PCPs face profession-specific barriers to PCOS education (S. Madappalli, R.N., video call interview, March 8, 2024). This is an issue in primary care profession-wide, with PCPs found to not have enough time to provide recommended care due to workforce shortages, low reimbursement rates, and other challenges (Porter et al. 2022; Hoffer 2024). Therefore, it is understandable that they may not have the resources to receive education on PCOS or feel confident in their knowledge of the condition. Furthermore, since the mechanism for PCOS initiates from many origins, PCPs may feel specialists are better equipped to decipher contributing factors in an individual patient. These factors lead to hesitancy in PCOS diagnosis by PCPs, leading to a high specialization in the syndrome's care as seen in Dr. Pal's practice. This is a widespread issue, with 47.1% of patients seeing at least three health professionals before receiving a PCOS diagnosis in the US and Europe (Gibson-Helm 2016; Huddleston et al., 2024).

Variations in the use of diagnostic criteria among specialists further complicate PCOS diagnosis. Due to the lack of nuance in the Rotterdam Consensus—one of the most common diagnostic criteria for PCOS—providers categorize the syndrome differently,

often depending on their specialty (Christ and Cedars 2023). The Rotterdam Consensus only considers symptoms that impact the HPO axis (physical manifestations of polycystic ovaries, hyperandrogenism, and dysfunctional ovulation) (Chen et al. 2022). Yet, the syndrome can also result from multiple aforementioned metabolic origins. R.N. Madappalli feels endocrinologists and metabolic specialists are not ubiquitously educated on PCOS (S. Madappalli, R.N., video call interview, March 8, 2024). In her experience, she observed that metabolic and endocrine specialists may not evaluate patients who present typical signs of PCOS during treatment for weight gain. This approach may exclude a substantial group of potential PCOS patients, given that 38% to 88% of women with PCOS are overweight or obese, and metabolic issues can trigger PCOS (Barber and Franks 2021). Since the Rotterdam Consensus categorizes PCOS as a syndrome of the reproductive system and does not allude to its metabolic origins, specialists outside of reproductive health may not consider PCOS when treating patients presenting its common symptoms. Through this lens, R.N. Madappalli argues that the Rotterdam diagnostic criteria are too narrow because they only consider the syndrome's reproductive implications (S. Madappalli, R.N., video call interview, March 8, 2024). These opinions may differ from provider to provider, diversifying the diagnostic considerations that patients with PCOS receive. For example, R.N. Madappalli's opinion on diagnosis differs from that of Dr. Michael Snabes, OB/GYN and medical director at Abbvie Pharmaceuticals (M. Snabes, M.D., video call interview, March 29, 2024). Dr. Snabes claims that the Rotterdam Consensus correctly reflects the centrality of the HPO

axis in the current understanding of PCOS. This disparity among healthcare providers highlights the variability in PCOS diagnosis and treatment; ambiguous areas in diagnosis exist where, when treating the same metabolic or endocrine symptoms, some providers consider diagnosing the condition and others do not.

Age further complicates methods of PCOS diagnosis. Adolescents and teens may experience worrisome cystic acne, male-typical hair growth, or other symptoms, but they may not meet the criteria for diagnosis (Roe et al. 2011; Peña et al. 2022). Adolescents are prone to PCOS-like symptoms and menstrual irregularities because of their young reproductive age. Considering this susceptibility, diagnosis may only occur starting 2-3 years past their first menstruation. Furthermore, individuals must be 8 years past their first menstruation for providers to use ultrasound or certain hormonal assays as diagnostic tools. These challenges interfere with a provider's ability to distinguish symptoms typical of PCOS from those typical of female adolescents, creating an age-related barrier to PCOS diagnosis.

In summary, issues of PCOS misrepresentation, PCP hesitance, variance in diagnostic criteria, and challenges in diagnosing adolescents complicate PCOS diagnosis. After identifying these challenges, it is understandable that PCOS has a high rate of undiagnosed patients, with 33.6% of women reporting waiting more than two years and 47.1% seeing at least three health professionals before receiving a diagnosis in the US and Europe (Gibson-Helm 2016). These factors further fuel the notion that PCOS is too complex to treat and contribute to mounting issues with patient treatment and satisfaction.

Treatment Limitations

Treatments for PCOS exist, but PCOS's wide breadth of symptoms, especially infertility, creates challenges with treatment satisfaction. While available treatments have been successful in managing symptoms in most populations, treatment options usually do not present a total cure for a patient's particular underlying mechanism of PCOS (M. Snabes, M.D., video call interview, March 29, 2024). According to Dr. Snabes, the two most difficult patient populations to treat are people receiving infertility treatment and those with PCOS. Considering that PCOS is a leading cause of infertility, these two groups heavily overlap. Dr. Snabes feels that patients receiving infertility care are often unsatisfied with treatments because of their intense, emotional desire for children. On the other hand, his largest observed challenge with PCOS care is that interventions are not available to address all of a patient's needs.

The four most common PCOS treatments do not address all of a patient's symptoms at once, do not work for every patient, and/or are inaccessible. These treatments include hormonal contraceptives, weight loss, medications for IR, and assisted reproductive technology (ART). Hormonal contraceptives are problematic due to their side effects, complexity, and prevention of pregnancy. Side effects from hormonal birth control are most severe in patients with a history of psychiatric illness (Martell et al. 2023). Thus, the comorbid mental illnesses associated with PCOS may exacerbate these side effects, leaving PCOS patients particularly vulnerable to mental health challenges while using hormonal birth control (Patel 2018). Furthermore, there are many formulations of hormonal contraceptives,

meaning that a doctor must consider a patient's needs versus the risks of each medication type before prescribing (Grand Rounds 2024). Once a formulation is chosen, birth control must fully cycle through the entire HPO axis for multiple menstrual cycles to alleviate symptoms (Britton et al. 2020). These factors cause delays in symptom relief, especially if patients need to switch between formulations to find their preference and must complete several weeks of medication before seeing improvement. Finally, patients cannot become pregnant on hormonal birth control, forcing them to weigh whether they would like to treat symptoms of hyperandrogenism or PCOS-related infertility (M. Snabes, M.D., video call interview, March 29, 2024). Other popular treatment options continue to be problematic.

Weight loss, medications for IR, and ART may be inaccessible and/or will not treat all aspects of PCOS. Weight loss is more difficult for those with PCOS, and it does not always rectify the mechanism(s) triggering a patient's PCOS (Patel 2018). Medications for IR are shown to improve both endocrine and metabolic deficiencies in some patients, but they are not currently approved for action in PCOS (UpToDate 2024). Therefore, patients must seek off-label diagnosis or clinical trials if they do not qualify for IR treatment. Lastly, ART for infertility is expensive and not typically covered by insurance (NCCDPHP 2019). Aside from this financial barrier, Dr. Snabes considers ART a temporary fix, as it does not address any known mechanisms of PCOS (M. Snabes, M.D., video call interview, March 29, 2024). Overall, PCOS treatments fail to address the syndrome comprehensively and may be inaccessible.

According to Dr. Pal, barriers arise when providers emphasize correcting the known mechanisms of PCOS rather than asking patients what their needs and values are (L. Pal, M.D., video call interview, April 5, 2024). Treating the mechanism of PCOS without considering all aspects of the patient's health and individual goals is improbable, as the syndrome greatly varies by genetic factors, lifestyle, and mental health, among other factors. Thus, treatment will be different for every patient. Without tailoring interventions to patients' individual wants and needs, treatment options cannot address the syndrome as a whole.

To summarize the limitations of PCOS treatment and diagnosis, a lack of nuance is a trend that emerges in PCOS care. The simplification of PCOS as a mysterious syndrome with one known cause promotes patient expectations that cure-all treatments exist (L. Pal, M.D., video call interview, April 5, 2024). This lack of nuance also causes PCPs to feel under-confident in treatment, leading to a high rate of specialization (Grand Rounds 2024). Furthermore, aspects of the syndrome that fall outside the Rotterdam Consensus, including metabolic origins and limitations for adolescent diagnosis, hinder PCOS diagnosis and cause diagnosis to vary by provider (Roe et al. 2011). Finally, PCOS treatments only impact groups of symptoms at a time, and therefore do not provide the patient a return to normalcy because they often cannot target all symptoms (M. Snabes, M.D., video call interview, March 29, 2024). To see an increase in patient satisfaction and diagnosis, health professionals must promote changes in all aspects of PCOS care.

Discussion

To encourage holistic PCOS care, understanding, diagnosis, and treatment must evolve. Understanding of PCOS needs to become more nuanced, replacing the patient preconception of a syndrome with a singular, unknown cure and instead considering the myriad of known mechanisms that cause some or all of the diverse PCOS presentations (Grand Rounds 2024). Patient-focused websites should reframe their definition of PCOS around its diverse mechanisms. Diagnostic criteria must consider mechanisms outside of the HPO axis, allowing providers removed from reproductive care to assist in treatment and consider PCOS during patient evaluations. An option for improvement would be to utilize the Androgen Excess Society or the NIH diagnostic criteria, which consider both the endocrine and metabolic phenotypes of PCOS (L. Pal, M.D., video call interview, April 5, 2024). Treatment of PCOS must focus further on a patient's unique phenotype. Dr. Pal's questioning criteria—considering patient needs, bothers, and risks—may serve as a model system for patient-focused care. Regarding treatment, Dr. Pal and Dr. Snabes both recommend research to target LH elevation using neurokinin 3 receptor antagonists, a medical intervention that has the potential to address the entire syndrome at once (Grand Rounds 2024; M. Snabes, M.D., video call interview, March 29, 2024). Together, these adjustments would promote the individualized and holistic patient experience that current treatment and diagnostic methods fail to create.

Considering the heterogeneous nature of PCOS, its dangerous comorbidities, and statistics on patient satisfaction and diagnosis, improving care is crucial. Current limitations of treatment and diagnosis

underscore the need for a patient-centered approach that considers both the diversity of the various PCOS mechanisms and individual patient needs. This method of care counters the misrepresentation of this syndrome and draws its power from an emphasis on patient preference.

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A Russian Woman's Fate: Forgotten
Wives and the Case of Nadezhda
Krupskaya
Julia Satola

Abstract

This paper offers a historiographical critique of the Western portrayal of Nadezhda Konstantinovna Krupskaya (1869–1939), an influential revolutionary figure who played a central role in staging the Bolshevik Revolution. Despite her revolutionary work and decades of essential organizational contributions to the party, Western historiography continues to define her primarily as “Lenin’s wife.” This paper challenges the wife-narrative by tracing Krupskaya’s intellectual and political development independent of Lenin and reexamining her significance to the Bolshevik Party. Through a gender-conscious lens and the framework of the “double burden,” I explore how Krupskaya navigated the overlapping demands of revolutionary labor, domestic labor, and political organization. Drawing on underutilized primary sources—including letters from the Polish Archive of Modern Records (Archiwum Akt Nowych)—this paper reconstructs Krupskaya’s role as a transnational network-builder and strategist during the émigré years. Ultimately, I seek to provide a revisionist history that separates Krupskaya from her marriage to Lenin and restores her to the historical record as a revolutionary in her own right

*Fate! — the Russian woman's fate!
Hardly could a harder one be found.*

- Nikolay Alexeyevich Nekrasov¹

A Forgotten Wife

To be a woman in history is to be forgotten, but to be a wife in history is to not only be forgotten but to be misremembered, trapped in the shadows of ‘great’ men. As the wife of Vladimir Lenin, one of the most notorious men of the 20th century, Nadezhda Konstantinovna Krupskaya serves as an excellent case study of a woman forgotten in history. Although Krupskaya was a Bolshevik feminist, Russian revolutionary, and the first Marxist pedagogue, among numerous other titles, she remains known as “Lenin’s wife” in the historical record. Moreover, Western scholarship on Krupskaya remains limited, with historian Robert H. McNeal’s 1972 biography *Bride of the Revolution* standing as the only comprehensive English-language biography of Krupskaya. The title itself reveals a narrative framed around Krupskaya’s identity as a wife rather than as a revolutionary actor in her own right. This in itself reveals a fundamental problem within contemporary Soviet historiography: the

¹ Nikolay Alexeyevich Nekrasov, “The Village Harvest Is in Full Swing...,” 1862, Culture.ru, <https://www.culture.ru/poems/40029/v-polnom-razgare-strada-derevenskaya>.

In 1899, Krupskaya began her first propaganda pamphlet, *The Woman Worker (Zhenshchina-rabotnitsa)*, with this quote from her favorite radical poet, Nekrasov.

marginalization of women—especially those related to the “great men” of Soviet history.

Although Krupskaya married Lenin, her repertoire of accomplishments and the significance of her role in the Bolshevik party throughout the pre-revolutionary era warrant a reexamination of her life and of how historians have portrayed her. Becoming a Marxist years before she met Lenin, she devoted her life to what she believed to be the cause that would liberate the people of Russia from tsarist oppression, often risking her life to do so and suffering years of political persecution, imprisonment, and exile. After her marriage to Lenin, she served as the nexus of essential emotional and logistical support without which he would not have survived until 1917. She acted as an essential party operative regarding the organization of revolutionary activities, becoming one of the Bolsheviks’ most experienced revolutionary organizers. She held numerous secretarial positions for the party, organizing correspondence and spearheading networking operations, spreading Bolshevik influence throughout Europe, Russia, and the Caucasus.

Although the breadth of Krupskaya’s work expands far beyond what will be covered in this paper, uncovering the true scope of her significance must start in the pre-revolutionary era. Through an examination of underexplored primary sources, this paper aims to counter and amend the prevailing historiographical paradigms perpetuated by McNeal and offer a new framework for Soviet women’s historiography. First, I will examine the trajectory of Krupskaya’s intellectual and political development prior to the start of her relationship with Lenin, aiming to establish her as a Marxist and revolutionary in her own right—a

perspective largely overlooked by Western scholars. Second, I will provide a nuanced analysis of letters from Poland's Archive of Modern Records that offer a snapshot of Krupskaya's intricate, essential underground organizational work within the Bolshevik party. Finally, I include a gender analysis of Krupskaya within the context of the "double burden" phenomenon, and the additional emotional and domestic labor she performed—a necessary factor in Lenin's success.

Through these three approaches, this paper critically engages with Western historiographical trends and reveals the complex interplay between gender, power, and historical memory in Russian Soviet women's history. The ultimate goal of this study is to develop a more nuanced framework by challenging reductive historical narratives, and finally restore Krupskaya to her rightful place in the historical record—not as "Lenin's wife," but as a revolutionary.

The Birth of a Revolutionary

Nadezhda Konstantinovna Krupskaya set out on her revolutionary path far before Lenin's shadow eclipsed hers. Born on February 26th, 1869, Krupskaya grew up surrounded by radical influences. According to Krupskaya's biographer Robert McNeal, "she was virtually born to this vocation, the only child of a radical man and an emancipated woman."² Although her parents were of noble descent, she grew up modestly as her parents owned no land or property.³ Krupskaya's father,

² Robert Hatch McNeal, *Bride of the Revolution: Krupskaya and Lenin* (Ann Arbor: The University of Michigan Press, 1972), 5.

³ Надежда Константиновна Крупская, "Моя Жизнь [*My Life*]," in *Педагогические Сочинения в Десяти Томах* [*Pedagogical Works in Ten Volumes*], ed. Иончарова, Каирова, and Константинова, vol. 1 (Москва: Институт Теории и Истории Педагогики АНП РСФСР,

Konstantin Ignatyevich Krupski—a bibliophile, an atheist, and an officer in the Russian military—died when she turned fourteen. Her mother, Elizaveta Vasilyevna Tistrova, an educated woman, worked as a governess, offering private lessons to children in upper-class households.⁴

Although born in St. Petersburg, Krupskaya spent time in Russian-occupied Poland, where the Russian military stationed her father, until 1874. Evidence suggests that she and her family also lived in Germany for some time—at age six, she recalled her first day of school in Nordhausen, Germany. She briefly lived in Kyiv at age eight and spent the rest of her childhood in various Russian villages. She returned to St. Petersburg as an adult, until the Russian authorities exiled her for revolutionary activity in the late 1800s. Afterward, she lived nomadically, traveling throughout Europe until the official establishment of the Soviet state in 1922.⁵

Krupskaya's first exposure to radicalism came from her father, who had some experience with the various resistance movements of the late 19th century. As a military officer in Russian-occupied Poland, he begrudgingly took part in the suppression of the Polish uprising. Krupskaya recalled that he “generally...[tried] to ensure that there were fewer victories for the tsarist

1957 [Moscow: Institute for the Theory and History of Pedagogy of the ANP RSFSR, 1957]), https://royallib.com/book/krupskaya_nadegda/avtobiograficheskie_stati_dorevolutsionnie_raboti.html.

All translations from Polish and Russian sources are mine unless otherwise noted.

⁴ McNeal, *Bride of the Revolution*, 11.

⁵ Крупская, “Моя Жизнь,” in *Педагогические Сочинения*.

army over those who rebelled against the unbearable yoke of Russian tsarism.” Unfortunately, his sympathy for the Jews and Poles resulted in his dismissal. He lost his right to enter government service with 22 crimes brought against him—one of which included simply speaking Polish. After they left Poland, Krupski took various odd jobs, moving “from city to city,” which Krupskaya credited for exposing her to “a lot of people of all kinds...[and] how different strata of the population lived.” Significantly, revolutionaries frequently visited the Krupskis’ home during Krupskaya’s childhood: “first nihilists, then narodniks, and later narodovoltsy.”⁶ Although her parents often sent her out to run errands during these visits, Krupskaya understood their significance. She later wrote that, although she could not be sure about the extent of her father’s involvement in the revolutionary movement, it radicalized her: “I understood early on what the autocracy of the tsarist officials was, what arbitrariness meant. When I grew up, I became a revolutionary, fighting against the tsarist autocracy.” Such exposure to radicalism continued to shape the course of her life.⁷

At age five, she became antagonistic towards landlords after hearing about her mother’s experiences as a governess: “how landowners treated peasants, what kind of beasts they were.” Later, in a conversation with

⁶ Nihilists refers to a late 19th-century cultural and intellectual movement that rejected traditionalism, advocating for radical social and political change. Narodniks refers to an anti-tsarist revolutionary movement among the Russian intelligentsia in the 1860s and 1870s, promoting agrarian socialism and seeking to mobilize the peasantry. Narodovoltsy (from *Narodnaya Volya*, or *People’s Will*) refers to a radical offshoot of the Narodniks active in the 1870s and 1880s, known for its use of terrorism, including the assassination of Tsar Alexander II in 1881.

⁷ Ibid.

her mother, Krupskaya overheard her father's powerful words: "he spoke about the centuries-old hatred of the peasants for the landowners, and how the landowners had deserved that hatred...I remembered my father's words for the rest of my life." At age six, after hearing her father discuss the dismal conditions at a factory in Uglich, Russia, where he worked as an inspector, her animosity extended to factory managers. From then on, she and the local village children threw snowballs at them. At age eight, in Kyiv, after witnessing the horrors of the Russo-Turkish war firsthand, she came to understand the horrors of war: "I saw wounded prisoners, played with a captive Turkish boy, and found that war was the most harmful thing." Krupskaya's formative years exposed her to the worst parts of the oppressive tsarist system and the growing capitalist one, all of which contributed to her desire to overthrow it.⁸

Not only did Krupskaya's path to revolution begin practically from birth, but so did her journey to becoming an intellectual. She described how her first book "fell into...[her] hands" at age three.⁹ Later, she reminisced about her first day of school in Nordhausen, Germany, at age six:

I stood in the doorway and told everyone who passed by that I was going to school today. My

⁸ Ibid.

⁹ Надежда Константиновна Крупская, "Что Я Помню Из Прочитанных в Детстве Книг [What I Remember From Books I Read as a Child]," in *Педагогические Сочинения в Десяти Томах [Pedagogical Works in Ten Volumes]*, ed. Иончарова, Каирова, and Константинова, vol. 1 (Москва: Институт Теории и Истории Педагогики АНП РСФСР, 1957 [Moscow: Institute for the Theory and History of Pedagogy of the ANP RSFSR, 1957]), https://royallib.com/book/krupskaya_nadegda/avtobiograficheskie_stati_dorevolyutsionnie_raboti.html.

Translation mine.

mother took my hand and we started walking. I think I would have run if it hadn't been for my mother, who was holding my hand tightly.¹⁰

Arriving at school, Krupskaya sat excitedly at her bench as all the other children cried or screamed, not wanting their mothers to leave. To the amusement of her class, she taught them how to draw a “piggy” on the chalkboard—her first foray into teaching. She graciously demonstrated this sophisticated “piggy” drawing technique in her 1911 article “My First Day of School.”¹¹

Her pursuit of education continued when, at age ten, she entered Gymnasium, the Russian term for secondary school. She recalled that the Gymnasium forbade students from reading “silly novels.” However, her parents, as intellectuals themselves, did not subscribe to this philosophy: “My father believed that...instead of forbidding, one should give children interesting, captivating, and good books.”¹² As such, Krupskaya’s parents nurtured her intellectual curiosity—a curiosity she carried with her for the rest of her life. Captivated by academics from a young age, she discovered her life-long passion at age eleven: education.

At the time, Krupskaya’s father managed the affairs of some landowners in the Pskov province. There,

¹⁰ Надежда Константиновна Крупская, “Мой Первый Школьный День [My First Day of School],” in *Педагогические Сочинения в Десяти Томах [Pedagogical Works in Ten Volumes]*, ed. Иончарова, Каирова, and Константинова, vol. 1 (Москва: Институт Теории и Истории Педагогики АНП РСФСР, 1957 [Moscow: Institute for the Theory and History of Pedagogy of the ANP RSFSR, 1957]), https://royallib.com/book/krupskaya_nadegda/avtobiograficheskie_stati_dorevolutsionnie_raboti.html.

Translation mine.

¹¹ Крупская, “Мой Первый Школьный День,” in *Педагогические Сочинения*.

¹² Крупская, “Что Я Помню Из Прочитанных В Детстве Книг,” in *Педагогические Сочинения*.

she met Alexandra Timofeevna Yavorskaya, or “Timofeika,” an eighteen-year-old school teacher.¹³ Although shy, Krupskaya immediately felt at ease with Timofeika. She not only influenced Krupskaya intellectually, but radically: “From her words, I understood that landowners were something very bad, that they did not help, but harmed the peasants, and that the peasants needed help.”¹⁴ She loved sitting in on Timofeika’s lessons and, most importantly, her Sunday gatherings for adult peasants. These gatherings sparked her love for the radical poet Nikolai Alexeyevich Nekrasov, whose works she later incorporated into her activism. She began her first propaganda pamphlet, *The Woman Worker (Zhenshchina-rabotnitsa)*, with a Nekrasov quote.¹⁵

Together, she and Timofeika traveled to neighboring villages distributing books and talking to peasants. McNeal cites Timofeika as the person “who gave Krupskaya her first clear idea of social protest.”¹⁶ Years later, she found out that the police raided Timofeika’s house, finding illegal literature and a vandalized portrait of the Tsar. They placed her in Pskov prison for two years; Krupskaya never saw her again. Nevertheless, Timofeika’s influence left a lasting impact on her. She inspired Krupskaya’s dream of becoming a village teacher: “Since then, I have remained interested in rural schools and rural teaching for the rest of my life.”¹⁷ This interest in rural education would later

¹³ Крупская, “Моя Жизнь,” in *Педагогические Сочинения*.

¹⁴ Ibid.

¹⁵ McNeal, *Bride of the Revolution*, 16.

The same quote featured in the epigraph of this essay.

¹⁶ Ibid., 166.

¹⁷ Крупская, “Моя Жизнь,” in *Педагогические Сочинения*.

manifest in one of history's most successful literacy campaigns.

Determined to continue her quest for enlightenment, Krupskaya entered the Obolenskaya Gymnasium upon the family's move to St. Petersburg in 1881.¹⁸ In 1883, while still attending the Gymnasium, her father died. She described him as someone "with whom...[she] was close and spoke about everything."¹⁹ His death affected both her and her mother deeply, emotionally and financially. Despite this, Krupskaya held onto her dream of becoming a teacher after graduation. Unfortunately, upon graduating, she could not find a position.

In the meantime, she briefly explored the Tolstoyan movement, but soon realized a philosophy of self-improvement was no match against oppressive systems: "I soon realized that this didn't change anything, and the unfair rules would continue to exist no matter how hard I worked at my job." She sought a way out, a way to change her life and "destroy exploitation." She believed that university held the solution. However, at the time, Russian law forbade women from participating in higher education, so she taught herself to the best of her ability. That is, until women's courses finally opened in St. Petersburg in 1889. At age twenty, she enrolled, and there she embarked on an irreversible path toward Marxism.²⁰

Krupskaya reflected on this experience in her 1922 article, "How I became a Marxist (From My

¹⁸ McNeal, *Bride of the Revolution*, 17.

According to McNeal, the building would be renamed the "N.K. Krupskaya Secondary School" during the Soviet period.

¹⁹ Крупская, "Моя Жизнь," in *Педагогические Сочинения*.

²⁰ Ibid.

Memories),” originally published in *The Young Communist* (*Yuny Kommunist*). According to Krupskaya, at twenty years old, she had not heard of Marx, the labor movement, or communism. Slowly, however, she began engaging in the St. Petersburg student movement, attending literary circles. In spring, she read *Das Kapital*: “I realized that only a workers’ revolutionary movement can change our lives, that in order to be useful and necessary, we must devote all our strength to the work of the workers.”²¹ For three years, she immersed herself in underground radical circles. By the time she started teaching at the Smolensk Evening-Sunday School, around winter of 1890/1891, she had become a true Marxist.²²

As such, Krupskaya became well-versed in Marxist theory and continued studying it for the remainder of her life. Yet, historians often overlook—sometimes outright deny—her intellectual contributions to Lenin’s work and their collaboration. McNeal perpetuates this notion as he questions Krupskaya’s political consciousness upon a disagreement with Lenin: “Did she really grasp the full implications of this criticism, which went right to the heart of Leninism...”²³ This subtle dismissal of her

²¹ Ibid.

²² Надежда Константиновна Крупская, “Как Я Стала Марксистской (Из Воспоминаний) [How I became a Marxist (From My Memories)],” in *Педагогические Сочинения в Десяти Томах* [*Pedagogical Works in Ten Volumes*], ed. Иончарова, Каирова, and Константинова, vol. 1 (Москва: Институт Теории и Истории Педагогики АНП РСФСР, 1957 [Moscow: Institute for the Theory and History of Pedagogy of the ANP RSFSR, 1957]), https://royallib.com/book/krupskaya_nadegda/avtobiograficheskie_stati_dorevolutsionnie_raboti.html.

Translation mine.

²³ McNeal, *Bride of the Revolution*, 145.

intellectual authority constitutes an *ad hominem* attack—one of many in his book. As an intellectual, a committed Marxist, an educator of Marxist theory, and a skilled propagandist, Krupskaya possessed an indisputable understanding of Marxism, which played an integral role in her life, as demonstrated by her intellectual and political development.

In *Forgotten Wives*, historian Ann Oakley speaks to this notion. Although women's and wives' domestic labor does not “strip...[them] of their intellectual power,” Oakley argues that many historians have “created an insidious caricature of wives as too practical and concerned with the everyday to have anything at all significant going on in their minds.”²⁴ Additionally, historians often refute intellectual collaboration among spouses, seeing wives as “helpers” rather than “progenitor[s], of...[their husband's] ideas,” frequently projecting these assumptions onto historical subjects and adjusting archival material to fit them.²⁵ McNeal makes excessive use of such caricatures, declaring that Lenin “did not require a real collaborator,” thus discrediting the intellectual merit of Krupskaya's work.²⁶

In another instance, again discrediting her intellectual contributions to the revolutionary movement, McNeal makes an unfounded claim that Krupskaya lacked sufficient oratory skill and equates her speeches to “redundant droning.”²⁷ However, primary sources show that, even early in her career at Smolensk, she

²⁴ Ann Oakley, *Forgotten Wives: How Women Get Written Out of History* (Policy Press, 2021), 189.

²⁵ Oakley, *Forgotten Wives*, 189.

²⁶ McNeal, *Bride of the Revolution*, 77.

²⁷ *Ibid.*, 188.

delivered demonstrably successful speeches, despite proclaiming herself as “extremely shy” and having difficulty presenting.²⁸ On one occasion, after she became more comfortable in her new role at Smolensk, she took initiative and “offer[ed] some innovations,” proposing she teach a seminar on geography. She lectured to “a large audience of workers [who] sat shoulder to shoulder on the benches.”²⁹ Although nervous, she gained confidence within five minutes of her lecture. She inspired lively conversation among the workers, starting a geography trend at the school. She even impressed her co-workers. Proper historical scholarship should seek to amend the biases of past historians. Therefore, historians must carefully examine Krupskaya’s intellectual development to properly contextualize her as a historical actor and overcome the biases embedded in her historiography.

Moreover, the framework through which Krupskaya has been depicted thus far portrays her as meek and subservient—historians have robbed her of her agency. Yet, her autobiographical articles reveal her undeniable agency, determination, and willingness to lead, all of which she expressed in her earliest years as a Marxist:

²⁸ Надежда Константиновна Крупская, “Пять Лет Работы В Вечерних Смоленских Классах [Five Years of Work in Evening Smolensk Classes],” in *Педагогические Сочинения в Десяти Томах* [*Pedagogical Works in Ten Volumes*], ed. Иончарова, Каирова, and Константинова, vol. 1 (Москва: Институт Теории и Истории Педагогики АНП РСФСР, 1957 [Moscow: Institute for the Theory and History of Pedagogy of the ANP RSFSR, 1957]), https://royallib.com/book/krupskaya_nadegda/avtobiograficheskie_stati_dorevolutsionnie_raboti.html.

Translation mine.

²⁹ Крупская, “Пять Лет Работы В Вечерних Смоленских Классах,” in *Педагогические Сочинения*.

Illegal workers' circles were few at that time; there were many more people wanting to lead circles than there were circles, and for me, a quiet, shy young woman who was just beginning to understand Marxist issues, there was almost no hope of being given a circle to lead.³⁰

Eager to "take an active part in the labor movement as soon as possible," Krupskaya created her own opportunities in Smolensk. There, she planted her roots as an organizer and propagandist and made herself into the leader she yearned to be. At the Sunday school, she began secretly teaching the workers about Marxism. Eventually, she wrote, "it [the school] became well known in revolutionary working-class circles," and a hub for revolutionary propaganda. Many of her students would go on to join the movement—many of them were arrested. Krupskaya never forgot her work at Smolensk, often writing about the cherished connections she made with her students until the end of her life: "The work at the school provided me with skills in political education work and an understanding of how to organize it effectively." As a result, her work at the school became an integral part of her success as a revolutionary and a stateswoman.³¹

To recapitulate, Krupskaya's path toward political consciousness began far before she met Lenin—as did her revolutionary and propaganda work. In St. Petersburg, she successfully established herself as a respected activist in her own right, prior to Lenin's arrival on the scene. Thus, historical analysis of Krupskaya must be founded on the premise that she was

³⁰ Ibid.

³¹ Ibid.

revolutionary in her own right, rather than implicitly linking her accomplishments to Lenin. They worked collaboratively, that is undeniable, but collaboration does not equate to subordination. One cannot give Lenin credit for her choices and accomplishments as that distorts the historical reality and perpetuates out-of-date, gendered historiographical narratives.

Additionally, available primary sources show that Krupskaya saw Lenin as her equal and collaborator. For one, in her memoir, *Reminiscences of Lenin*, Krupskaya described decisions regarding the movement, party organization, and intellectual works as collective, using the pronoun “we,” rather than attributing them to Lenin specifically. Furthermore, in her preface to part three, she explicitly described her role as Lenin’s collaborator: “Until our arrival in Russia in 1917 I had worked side by side with Ilyich [Lenin]. My work had been a direct aid to his activities...”³² Arguably, Lenin also viewed Krupskaya as his equal, but evidence regarding his thoughts on their intellectual collaboration remains inconclusive. As a “great man,” Lenin had a propensity for self-importance and pretentiousness. Even so, he understood Krupskaya’s significance both to his well-being and to the party. As historian Helen Rappaport describes in *Conspirator*, her biography of Lenin’s revolutionary years, throughout his years of exile Lenin relied on a “network of female activists who kept him going...”³³ Lenin’s predisposition to self-importance and pretentiousness, along with the cult

³² Nadezhda Konstantinovna Krupskaya, *Reminiscences of Lenin*, trans. Bernard Isaacs (Chicago: Haymarket Books, 2018), 379.

³³ Helen Rappaport, *Conspirator: Lenin in Exile* (Random House, 2010), 50.

of personality that would develop around him, frame the typical analyses of the women in his orbit. This framework carries on the notion that “great men” and “geniuses” did not need collaborators.

However, plenty of evidence exists that Lenin acknowledged Krupskaya’s intellectual contributions to the revolution and understood her as a revolutionary in her own right. In 1915, Krupskaya completed a study on education and democracy, entitled “National Education and Democracy (*Narodnoye Obrazovaniye i Demokratiya*).” According to the editor’s notes on the study in her collected works, it was the first work to systematically apply Marxist philosophy to education, connecting it with productive labor. In her research, she studied an abundance of primary sources and the work of contemporary pedagogues from all over the world. She compiled 26 notebooks filled with excerpts from her research. In 1916, Lenin forwarded the manuscript to the famous Soviet writer Maxim Gorky. He praised the work, not addressing Krupskaya as his wife, but as an author, indicating that he valued her work for its intrinsic merit, independent of their relationship. He wrote, “The author has been involved in pedagogy for a long time, over 20 years... This is very important... The demand for literature in this field has undoubtedly increased in Russia now.” Krupskaya pioneered Marxist educational theory, and Lenin acknowledged the importance of this endeavor. Any argument to the contrary reflects a historiographical error: projecting the Western sexual division of labor onto female Russian revolutionaries.³⁴

³⁴ Иончарова, Каирова, and Константинова, note on “Народное Образование и Демократия [National Education and Democracy],” in *Педагогические Сочинения в Десяти Томах [Pedagogical Works in Ten Volumes]*, vol. 1 (Москва: Институт Теории и Истории

Further complicating this analysis, Krupskaya understood Lenin's historical significance and devoted a significant portion of her labor to upholding his legacy, seldom writing about herself. In the introduction to her memoir, she wrote that Lenin took part in an epoch of "tremendous historical importance," motivating her to write about her life with him.³⁵ It would be naive to deny Lenin's significance; however, it would be equally as naive to deny the necessary, collaborative roles of the women he worked with. Lenin and Krupskaya's revolutionary work *was* different, but it constituted equal parts of a whole. Marx and Engels, for example, operated with a similar dynamic; however, as two men, the sexual division of labor has not been imposed upon their historical relationship. Krupskaya also assumed the responsibility for additional labor, which will be addressed later in this essay. Thus, imposing a subordinate role onto Krupskaya projects modern, Western, capitalist constructions of gender roles and the sexual division of labor, skewing the historical narrative. Scholars of Russian and Soviet women's history must bear this in mind, and consciously avoid such projections.

In reality, Krupskaya understood her work as work that served a cause—the Party and the revolution. Lenin *was* the founder and leader of the Bolshevik Party, later of the Soviet Union. With this in mind, portrayals of Krupskaya's work as "under Lenin's direct

Педагогика АНП РСФСР, 1957 [Moscow: Institute for the Theory and History of Pedagogy of the ANP RSFSR, 1957]), https://royallib.com/book/krupskaya_nadegda/avtobiograficheskie_stati_dorevolutsionnie_raboti.html.

Translation mine.

³⁵ Krupskaya, *Reminiscences of Lenin*, 5.

supervision” start to take a different form.³⁶ While such language is arguably dismissive, we must understand the reality of the fact that she—like numerous other important historical figures—worked on *behalf* of a party. Historians like McNeal may describe this argument as an attempt to “inflate her independent role” in the party; however, placing Krupskaya within the proper historical context is hardly “inflating” her role.³⁷ Her work speaks for itself.

On the Front Lines

Around 1893, Krupskaya and other St. Petersburg radicals began to develop what she described as “a very weak organization,” which would later become the Social Democratic Party.³⁸ By 1894, Lenin had come to St. Petersburg and worked in Krupskaya’s district. According to Krupskaya, they “soon became very good friends” after a secret meeting of local Marxist circles—infamously disguised as a “pancake party” (*Blinnyaya vecherinka*).³⁹ With Lenin’s help, their “weak organization” began to develop into a more sophisticated party. In her memoir, Krupskaya described this period as one of “great importance” as they established closer contact with the masses and learned “how to win their confidence and rally them behind us.” She admitted, however, that the work itself offered little of note. She credits this period for molding Lenin into “a leader of the working masses.”⁴⁰ This marked the

³⁶ McNeal, *Bride of the Revolution*, 101.

³⁷ Ibid.

³⁸ Крупская, “Пять Лет Работы В Вечерних Смоленских Классах,” in *Педагогические Сочинения*.

³⁹ Крупская, “Моя Жизнь,” in *Педагогические Сочинения*.; Krupskaya, *Reminiscences of Lenin*, 12.

⁴⁰ Ibid., 25-26.

beginning of Krupskaya's career as a professional revolutionary.

In the spring and summer of 1896, Krupskaya busied herself with propaganda and organizational work, setting the stage for her professional revolutionary work until 1917. She assisted in organizing the summer strikes of 1896, which, according to Cecilia Bobrovskaya, Bolshevik activist and comrade of Krupskaya and Lenin, "resulted in the adoption of the first law ever introduced in Russia restricting the work day—to eleven and a half hours."⁴¹ Unfortunately, amongst increasing police surveillance, the police arrested Krupskaya—along with a handful of her comrades—on August 12, 1896.⁴² In her memoir, she devotes a single sentence, in parentheses, to this fact: "(I was arrested myself in August 1896)."⁴³ However, Bobrovskaya confirmed that "Krupskaya was kept in solitary confinement [in St. Petersburg detention prison] for seven months as a political prisoner."⁴⁴ There, she spent her time studying Marxist theory.⁴⁵ Even in prison, Krupskaya never stopped working. Bobrovskaya attests that she immediately "established a secret correspondence with Lenin, who had been confined in the same prison since December 1895."⁴⁶

After the self-immolation of prisoner Mary Vetrova, the authorities released Krupskaya early, and she followed Lenin into exile, where they married out of convenience: "Since then, my life has followed his life, and I have helped him in his work in any way I could."

⁴¹ Cecilia Bobrovskaya, *Lenin and Krupskaya* (New York: Workers Library Publishers, 1940), 12.

⁴² Bobrovskaya, *Lenin and Krupskaya*, 12.

⁴³ Krupskaya, *Reminiscences of Lenin*, 27.

⁴⁴ Bobrovskaya, *Lenin and Krupskaya*, 13.

⁴⁵ Ibid.

⁴⁶ Ibid.

From that point forward, Krupskaya devoted her life to party work. Self-described, her work “during the years of emigration consisted mainly in relations with Russia.” This included acting as secretary to the Central Committee from 1905-1907 and managing the underground Bolshevik network through various party publications.⁴⁷

One of these publications being *Iskra* (*the Spark*), an underground paper and the official organ of the Russian Social Democratic Labour Party.⁴⁸ According to her memoir, “Vladimir Ilyich told me when I arrived that he had arranged for me to be the secretary of *Iskra* upon my arrival [in Munich, April 1901].”⁴⁹ He felt it “necessary [to appoint her] in the interests of the cause.”⁵⁰ She described how she had her “hands full at once,” diligently managing covert correspondence between *Iskra* operatives, sending illegal literature, working on developing transport lines for sending *Iskra* to Russia, and leading “all kinds of negotiations.”⁵¹ Overall, Krupskaya had a tremendous impact on coordinating the party’s underground work. According to McNeal, Krupskaya stood “at the center of a fairly complicated and effective network of agents.”⁵² A feat which Bobrovskaya attested to.

According to Bobrovskaya, *Iskra*, like the later official party organ *Pravda* (*Truth*), played a “vital role...in the developing revolutionary movement.”⁵³ She

⁴⁷ Крупская, “Пять Лет Работы В Вечерних Смоленских Классах,” in *Педагогические Сочинения*.

⁴⁸ McNeal, *Bride of the Revolution*, 96.

⁴⁹ Krupskaya, *Reminiscences of Lenin*, 59.

⁵⁰ *Ibid.*, 60.

⁵¹ *Ibid.*

⁵² McNeal, *Bride of the Revolution*, 101.

⁵³ Bobrovskaya, *Lenin and Krupskaya*, 19.

described *Iskra* as a turning point in the Russian Social-Democratic Labor Party's organization as it brought together a single party formed from a plethora of "disconnected groups and circles."⁵⁴ *Iskra* became a "collective organizer" around which a group of party agents formed. As a result, "[t]he part Krupskaya played in organizing regular communication with these agents was of the greatest importance," precisely because these publications served as the party's central organ.⁵⁵ Without *Iskra*, and later without *Pravda*, there would be no party.

Moreover, even McNeal acknowledges that this "remarkable one-woman operation...[provided] the *Iskra* underground organization a degree of coordination that no previous Russian revolutionary organization had known."⁵⁶ However, he nevertheless dismisses Krupskaya's role as "under Lenin's direct supervision."⁵⁷ While it should be noted that Krupskaya herself admitted that her appointment to *Iskra* secretary strategically ensured "that all intercourse with Russia would be closely controlled by Vladimir Ilyich," her work entailed a considerable level of autonomy.⁵⁸ She worked collaboratively with, rather than subordinate to, Lenin. In her eyes, they acted as a unit. Ultimately, McNeal's claims about her lack of autonomy have no substantial basis in the evidentiary record. Instead, they reflect a male-dominated historical framework, projecting a subordinate role onto Krupskaya.

⁵⁴ Ibid., 20.

⁵⁵ Ibid., 21.

⁵⁶ McNeal, *Bride of the Revolution*, 101.

⁵⁷ Ibid.

⁵⁸ Krupskaya, *Reminiscences of Lenin*, 59-60.

For historians like McNeal, their assertion of Lenin's authority constitutes nothing more than a projection of a subconscious judgment about the inherent subordination of wives. Even though McNeal points out that "Krupskaya carried on her taxing work without a great deal of direct guidance from Lenin," he insists on falling back on the idea that Lenin held sole control, not considering the possibility of collaboration, let alone Krupskaya's autonomy.⁵⁹ By not situating Krupskaya's party work properly within party operations and the larger historical framework of the revolutionary underground, he poses an ahistorical argument. The following examination of Krupskaya's party work throughout the pre-revolutionary period reveals that her contributions were imperative for the party's success and—especially in her later roles—she operated with a high degree of autonomy within a collaborative framework. Her work cannot be described as blindly subordinate; she exercised independent judgment and initiative within the larger party structure.

Krupskaya's influence within the party grew in 1903, following the Second Party Congress and the resulting Bolshevik-Menshevik split. Due to conflict among the respective factions, Lenin left the *Iskra* editorial board on October 19th. Krupskaya, however, chose to remain in her position as secretary, presumably to ensure some semblance of Bolshevik influence remained in *Iskra*. Krupskaya constituted the center of *Iskra*'s underground operations, and, with trepidation, the editors recognized this. McNeal posits that the editors did not immediately vote her out as they may have "feared her ability to sabotage their efforts by

⁵⁹ McNeal, *Bride of the Revolution*, 102.

withholding the files of addresses [and] codes.” However, in December of 1903, the board appointed her a deputy to handle correspondence with Russia, and Krupskaya resigned, feeling disrespected by the power move.⁶⁰

After her resignation, she performed secretarial duties for the Russian branch of the Russian Social Democratic Labor Party’s Central Committee until 1907. Such organizational work spanned throughout Krupskaya’s career as a professional revolutionary. In August of 1906, she went on to become the secretary of Lenin’s new central organ, *Proletarii* (*The Proletarian*). In 1911, she became one of the leading members of the Paris group of the “Emigrant Organization” alongside Lenin and French-Russian Bolshevik Inessa Armand.⁶¹ Before the revolution of 1905, she held a similar position in the “Foreign League of Russian Revolutionary Social Democrats.” She continued such work throughout the First World War. Around the same time, Krupskaya served as secretary for yet another of Lenin’s factional newspapers, *Rabochaya Gazeta* (*The Working-Class News*), where she continued “writing her accustomed letters in defense of the Bolshevik cause.” Beyond secretarial work, McNeal alleges that, at some point, she also served as the party accountant.⁶²

In 1912, Krupskaya’s responsibilities mounted. After the January 1912 conference in Prague, the Social Democrats officially split into two different parties: the Bolsheviks and the Mensheviks. Thus, forming a new Bolshevik Central Committee—for which Krupskaya

⁶⁰ Ibid., 112.

⁶¹ Ibid., 139.

⁶² Ibid., 112, 129, 139, 144.

effectively acted as secretary, although the position did not formally exist. McNeal describes her role as “not only taking care of correspondence but also carrying the main burden of organizational details, including false passports and housing when the committee met secretly in Austrian Poland.” Considering her expertise lay in underground organization, she did not assume the position of a formal member of the committee, although she did participate in meetings and “once gave a major report on the activities of the local underground committees.” After *Pravda*, the official newspaper of the Bolshevik party, began legal publication in St. Petersburg in mid-1912, its organization became the focus of Krupskaya’s party work. Around this time, Krupskaya and Lenin left Paris for Kraków, Poland, where they would live until 1914, leaving shortly after the outbreak of World War I. In Poland, frustrations regarding the remote organization of the paper abounded—and Krupskaya remained at the forefront. This short, two-year period offers a compelling snapshot of her work and her indispensable role in the Bolshevik underground.⁶³

Based on the contents of the abundance of letters she received from 1912-1914, preserved in the Polish Archive of Modern Records, much of Krupskaya’s work revolved around the intellectual and informational needs of the party. This meant intelligence acquisition and dissemination—both from the top-down and the bottom-up. As with *Iskra*, in 1912-1914, Krupskaya’s role primarily consisted of managing correspondence, disseminating literature, and managing or assisting in organizing various party publications. As the link

⁶³ Ibid., 144-145.

between smaller factions of the Bolshevik underground network and the Central Committee, the party's organizational stability depended on her.

Although the letters in Poland's Archive of Modern Records are only a fraction of Krupskaya's correspondences, the sheer volume of letters from just two years speaks to the vastness of the operation Krupskaya oversaw. As *Iskra's* secretary, hundreds of letters passed through Krupskaya's hands every month.⁶⁴ Presumably, correspondence continued at this rate in 1912, if not increased. Her correspondence spanned multiple countries—and sometimes various languages—offering an intimate glimpse into her many responsibilities within the party.

Particularly, much of her correspondence related to the dissemination of various Bolshevik publications—primarily, *Pravda*, but also *Prosveshcheniye* (*Enlightenment*), the Bolshevik theoretical journal. As the Bolshevik party's central organ, *Pravda* served as the center of the Bolshevik underground network's communication and served as propaganda and political education for the working class; direct engagement with the populace constituted an essential element of the revolutionary movement. It provided updates, ideological clarity, and served to unify the internationally dispersed party cells that made up the larger Bolshevik party. Ensuring party members across Europe and the Caucasus clearly understood the party line proved essential—especially in turbulent times. For the Bolsheviks, a well-informed party served as the

⁶⁴ Bobrovskaya, *Lenin and Krupskaya*, 19.

primary defense against one of their biggest threats: factionalization.

Since the Menshevik-Bolshevik split of 1903, the prospect of factionalization constantly worried Lenin, Krupskaya, and other Bolshevik leaders. Risking further stratification jeopardized the party, weakening their platform against the Mensheviks. As such, Krupskaya's correspondents kept her updated on such threats. Her contacts warn of "liquidationists," a less radical faction that advocated for the liquidation of the Bolshevik's underground organizations in favor of legal means, as well as "Vperyodists," members of the *Vpered* (*Forward*), a sub-faction of the Bolsheviks critical of Lenin.⁶⁵ Lenin particularly criticized the Vperyodists, claiming in 1914 that their actions were "tantamount to waging war against Marxism, against the organized and united majority of the workers."⁶⁶ In this sense, Krupskaya served as a primary line of defense.

Krupskaya organized lines of transportation for *Pravda* and illegal publications. When things went awry, she took responsibility for fixing them. As such, her contacts often reached out to her to ensure that they received necessary literature. In one instance, one of Krupskaya's correspondents in Geneva, Olga, sought her help obtaining essential party publications. On March 10th, 1914, she expressed that, in Geneva, the party

⁶⁵ Korespondencja do W.I. Lenina i N. Krupskiej [Correspondence to V.I. Lenin and N. Krupskaya], letters from M.E., 1913-1914, 2/1233/0/60/47, *Archiwum Włodzimierza Ilicza Lenina w Polsce* [Archive of Vladimir Ilyich Lenin in Poland], *Archiwum Akt Nowych* [Archive of Modern Records], Warsaw, Poland.; Vladimir Lenin, "The Vperyodists and the Vperyod Group," Marxists Internet Archive, June 1914, <https://www.marxists.org/archive/lenin/works/1914/jun/00b.htm>. Translation mine.

⁶⁶ Lenin, "The Vperyodists and the Vperyod Group."

significantly lacked recent editions of both *Pravda* and *Prosveshcheniye*. She lamented, “In Geneva, there are no copies of *Prosveshcheniye* at all, so even our comrades can’t read it.” Both Olga and Krupskaya understood what this meant: not only were their propaganda activities inhibited, but there was a break in party communication. Even worse, Olga informed Krupskaya that they had not received *Pravda* since mid-1913. She requested that Krupskaya “arrange” for them to receive copies of the respective publications, emphasizing that it was “necessary.” This became especially pertinent to developing a stronger Bolshevik presence in Geneva, as Olga conveyed that they had difficulties organizing. As the person responsible for maintaining the party’s intellectual and informational needs, this represents one of, what were no doubt, hundreds of such instances for Krupskaya.⁶⁷

Moreover, Krupskaya did not just disseminate necessary intellectual information; she acted as the hub for data on party progress. She relied on her contacts to update her regarding local party cells and future organizational plans. As the first line of defense when issues arose in a regional cell, contacts urgently reached out to Krupskaya, seeking advice and directives. In one undated letter from St. Petersburg, signed “Solnyshko,” this sense of urgency is palpable:

As for the forces we have, they are too insignificant...this is a serious danger because we—“the center”—are weak in terms of

⁶⁷ Korespondencja do N. Krupskiej [Correspondence to N. Krupskaya], letters from Olga, 1913-1914, 2/1233/0/60/33, *Archiwum Włodzimierza Ilicza Lenina w Polsce* [Archive of Vladimir Ilyich Lenin in Poland], *Archiwum Akt Nowych* [Archive of Modern Records], Warsaw, Poland.
Translation mine.

personnel...there's no one to immediately replace us, and so there will be a delay, or we will have to start again. I draw your serious attention to this situation...⁶⁸

In conjunction with this letter, he sent her “a summary of reports from the field...on the developments [in St. Petersburg].”⁶⁹ According to him, the situation in Moscow was “a complete debacle” as well.⁷⁰ In such instances, Krupskaya’s role proved indispensable to party organization and development. In an undated letter from “Nikolaev” in Moscow, he expressed to an “M.G.” that “[they are] absolutely idle here [Moscow] without any directives from the Central Administration.”⁷¹ The party cells felt lost without their lifeline.

However, Krupskaya’s party work did not solely entail passive intelligence gathering and dissemination—she played a key role in transnational organizing as well. In 1912-1914, conditions were ripe for revolutionary organization and exposing the masses to Bolshevik ideas. With heightened tensions and a war looming over Europe, radicalism was in the air. On July 3rd, 1914, Olga expressed that, in Geneva, despite the

⁶⁸ Korespondencja do W.I. Lenina i N. Krupskiej [Correspondence to V.I. Lenin and N. Krupskaya], letter from Solnyshko, 1914, 2/1233/0/60/38, *Archiwum Włodzimierza Ilicza Lenina w Polsce* [Archive of Vladimir Ilyich Lenin in Poland], Archiwum Akt Nowych [Archive of Modern Records], Warsaw, Poland. Translation mine.

⁶⁹ Korespondencja do W.I. Lenina i N. Krupskiej, letter from Solnyshko, 1914.

⁷⁰ Ibid.

⁷¹ Korespondencja do W.I. Lenina i N. Krupskiej [Correspondence to V.I. Lenin and N. Krupskaya], letter from Nikolaev, 1914, 2/1233/0/60/38, *Archiwum Włodzimierza Ilicza Lenina w Polsce* [Archive of Vladimir Ilyich Lenin in Poland], Archiwum Akt Nowych [Archive of Modern Records], Warsaw, Poland. Translation mine.

state of affairs, there was “an air of optimism among the youth” and that the “proletarian environment...[was] much more positive.”⁷² In another, undated letter from Georgia, the sender relayed to Krupskaya that “the time is now more favorable than ever for Bolshevik activity.”⁷³ Through Krupskaya’s work, the Bolsheviks took advantage of the transnational revolutionary atmosphere.

Via correspondence with individual agents, Krupskaya developed connections across Europe, Russia, and the Caucasus. Often, this proved to be a difficult task as these “connections” sometimes entailed only one person. Yet, as Bobrovskaya described, Krupskaya had a remarkable ability: from that one contact, she could “get in touch with the advanced workers in the given locality” and convince their friends to write for party publications or help with distribution.⁷⁴ Although Krupskaya used her organizational and network-building skills throughout the entire pre-revolutionary period, one series of letters offers insight into her influence on a crucial period of network-building in the Caucasus, around 1913.

First, it should be noted that, from 1912 to 1914, the Caucasus—particularly Georgia—were a hotbed of revolutionary activity and, as a result, a place of strategic significance for the Bolsheviks. Geographically, this region constituted the borderlands of a dying empire with a powerful sense of national identity. Material conditions had rapidly deteriorated since the start of the

⁷² Korespondencja do W.I. Lenina i N. Krupskiej, letters from Olga, 1913-1914.

⁷³ Korespondencja do W.I. Lenina i N. Krupskiej, letters from M.E., 1913-1914.

⁷⁴ Bobrovskaya, *Lenin and Krupskaya*, 20.

20th century, meaning an angry proletariat ripe for radicalization. The Bolsheviks understood this, as did the Mensheviks. Unfortunately, the Mensheviks had driven the Bolsheviks out of Georgia around 1909; as such, they lacked adequate numbers.⁷⁵ Things looked bleak—unless they built a network. Thus, from 1912 to 1914, the Bolsheviks were locked in a battle for the Caucasus—with Krupskaya on the front lines.

In a series of three letters, the story of a piece of the Bolshevik's network in the Caucasus unfolds. The newly formed Bolshevik party, lacking in numbers, had numerous enemies surrounding them: Mensheviks, liquidationists, and Vperyodists. Hoping to outmaneuver them, around late 1913 to early 1914, Krupskaya passed on a letter to Inessa Armand to deliver to one of her contacts. Her goal: strengthening the Bolshevik network in the Caucasus against the rising tide of Menshevism. Presumably, weeks went by until she finally received a letter signed, somewhat legibly, "M. Edilierov." In the Caucasus, either Tbilisi or Baku (he does not specify), Edilierov frantically wrote to Krupskaya:

...I didn't reply right away, and I hope you won't judge me. I don't have any reliable addresses for our comrades in the Caucasus at hand, so I immediately sent three letters to secondary addresses, asking them to reply and provide the addresses of specific comrades. As soon as I receive answers, I'll write to you right away...until now, I was constantly in a miserable situation, which prevented me from taking up this useful task...

⁷⁵ Ronald Grigor Suny, *Stalin: Passage to Revolution* (Princeton, NJ: Princeton University Press, 2022), 375.

After his apology, he expressed optimism, “If it’s possible to reach all these people and connect with them as we should, with all necessary precautions, we could establish a good network.” At the time of his letter, only one Georgian Bolshevik besides Edilierov remained in his vicinity. Clearly, he understood the importance of Krupskaya’s mission.⁷⁶

Fortunately, his second letter contained good news. Having received replies from “three comrades in Georgia,” their potential network looked promising. Being a diligent organizer, Krupskaya already happened to be in correspondence with one of Edilierov’s comrades—a “Malakia.” The other, “Niko Sakareli,” a former Baku worker and a Bolshevik, Krupskaya allegedly knew from party congresses. The third, in Edilierov’s words, appeared to be “unknown” to her. Edilierov then summarized the letters Malakia and Niko forwarded him.⁷⁷

Malakia reaffirmed what Krupskaya already knew: “the time is now more favorable than ever for Bolshevik activity, but...there are absolutely no resources or people. All of the more or less energetic people have been arrested and sent to distant locations.” At the same time, Edilierov lamented the Bolshevik’s past glory in the Chiatura region in 1905 where he worked with Koba (Stalin). He further attested to the significance of Krupskaya’s organizational efforts as he described the “dissatisfaction...expressed by the intelligentsia” towards the “liquidators” who he claimed “stifle” the voices of the workers. He also complained of the liquidators’ “unchecked” control of workers’ papers.

⁷⁶ Korespondencja do W.I. Lenina i N. Krupskiej, letters from M.E., 1913-1914.

⁷⁷ Ibid.

The resulting tension between the workers and the intelligentsia could prove detrimental to the party's efforts. Slowly, however, things began to improve.⁷⁸

Once Krupskaya updated Lenin and the Central Committee on these developments, she wrote back to Edilierov with Lenin's questions about the Georgian press, and what appears to be a legislative draft regarding the "national question" (*natsional'nyi vopros*). According to Stalin historian Ronald Suny, at the time, the "national question" was a "vital issue that vexed the Georgian Marxists." He explains that the question revolved around "how to deal with ethnic and cultural tensions and how should a future Russian state be structured [sic]." Thus, the Bolshevik movement and their political prospects required an unwavering party platform on the "national question"—especially in the multi-ethnic Caucasus region. In this respect, Edilierov's response paints a rather optimistic picture of their progress.⁷⁹

With Krupskaya's guidance, he established continuous contact with the aforementioned individuals, two of whom, he wrote, "are writing a lot now in the Georgian press on the national question." Circulating the Bolshevik party line regarding the national question in the Georgian press got them one step closer to countering Menshevik influence in the region. Additionally, Edilierov established contact with Filipp Makharadze, whom he described as "a prominent figure in the Georgian socialist press...a composed Bolshevik and an educated Marxist." He promised to get his opinion on the national question and expressed

⁷⁸ Ibid.

⁷⁹ Suny, *Stalin: Passage to Revolution*, 106, 513.

confidence that his input would be “very useful for the cause” due to his influence in the press. He advised Krupskaya to put Lenin in contact with him and sent his address. Finally, following Krupskaya’s directives, Edilierov concluded his letter with a commitment to continue their networking efforts: “I will try with all my might to focus on correspondence with the Caucasus, as you say.”⁸⁰

In the context of these letters, Krupskaya emerges as far more than a passive secretary. She played an essential role as an active organizer and revolutionary. Her work went beyond administrative duties; she actively engaged with the ideological divisions and factionalism that could have undermined the party’s unity. The correspondence in these letters reveals how Krupskaya helped the Bolsheviks push their party line through socialist papers in the Caucasus, fostering support and gaining insight into the revolutionary climate of the region. Her contributions proved pivotal to re-establishing Bolshevik presence in the area, and it is likely that the network she built only expanded as her correspondence continued. By strategically navigating these complex political landscapes, Krupskaya ensured the party’s success, setting the stage for future victories in the region.

Admittedly, without the letters authored by Krupskaya, fully understanding her organizational role becomes more difficult. Regardless, Edilierov’s letters indicate that Krupskaya served as the central link between party cells, such as those in Baku and Tbilisi, and the Central Committee. For one, Edilierov’s letters

⁸⁰ Korespondencja do W.I. Lenina i N. Krupskiej, letters from M.E., 1913-1914.

often included requests for Krupskaya to pass information along to “Vladimir Ilyich.” Additionally, network building worked both ways. Krupskaya sent the addresses she already had in her repertoire of local comrades to Ediliev, instructing him to establish connections with them. He references one such comrade of Krupskaya—a “non-factional, though anti-liquidationist” stationed in Baku. Krupskaya also reminded him of a “Fyodor” whom she advised Ediliev to contact, and he agreed. Thus, through cooperation, she linked handfuls of scattered contacts into a stronger party cell.⁸¹

Moreover, the tone of the letters implies that Krupskaya had more authority and respect than historians have afforded her thus far. Although McNeal acknowledges the essential nature of her party work, he frames it as unskilled labor: “Her contribution to the development of the organization that became Bolshevism required not genius but inexhaustible devotion.”⁸² While he correctly identifies Krupskaya’s “inexhaustible devotion,” he downplays and minimizes her skills and expertise. Her contemporaries, however, do not; they never treated her as a faceless secretary. Krupskaya’s skills entailed more than impressive organization—she established rapport and long-lasting relationships with her contacts. As a result, they often shared personal details with her, gave updates on their lives, and asked about hers. Ediliev did so in his first letter, sharing his feelings of “what the poets call a longing for the homeland, for Russia” and updates about

⁸¹ Ibid.

⁸² McNeal, *Bride of the Revolution*, 101.

his family.⁸³ They also understood the significance of and appreciated her arduous work. In one letter, the sender began with a declaration that reflected this understanding: “Knowing how busy you are, I considered it inappropriate to distract you with my affairs.”⁸⁴ Building rapport, keeping up a constant communication stream, and recording and safeguarding addresses and contact information for hundreds of people took skill. It took intention and, more importantly, it took autonomy.

In the context of these letters, Krupskaya emerges as an autonomous actor and authority figure—a revolutionary. Through historians’ depictions of Krupskaya as Lenin’s faceless subordinate, the significance of her work remains unacknowledged. However, by situating her accurately in the historical record as the crucial link between the central party apparatus and its regional organizations, scholars can gain a deeper understanding of the complexities of the Bolshevik movement and its eventual success. As a party organizer and secretary, Krupskaya controlled the fate of the party—and its leader.

Doubly Burdened

Krupskaya’s diligent party work, however, constitutes only *some* of what she contributed to the revolution; thus, somewhat complicating this analysis. Oakley points out the phenomenon of confusing wifely labor with secretarial labor: “Secretaries are often confused with wives, but the two are not the same,

⁸³ Korespondencja do W.I. Lenina i N. Krupskiej, letters from M.E., 1913-1914.

⁸⁴ Korespondencja do W.I. Lenina i N. Krupskiej, letters from Olga, 1913-1914.

except sometimes in the eye of the beholder...⁸⁵ That being said, this both is and is not the case with Krupskaya. While she formally worked as a secretary and held various other organizational positions within the party apparatus, this role remained separate from and in addition to her “wifely labor.”

In this respect, she embodied the phenomenon of the “double burden”: not only did Krupskaya work for the party, but she also did unpaid domestic labor. Rappaport best describes Krupskaya’s place in relation to this phenomenon:

[Krupskaya] spent her life worrying about her husband's well-being and managing his levels of rage...[she] always considered herself to be Lenin’s first and most important political sounding board...[she] too needed a break not just from her burden of party work but also from the “constant turmoil” of housekeeping.⁸⁶

Additionally, as previously mentioned, Krupskaya served as the core of the network of women that Lenin relied upon for his emotional and physical stability. Throughout her memoir, Krupskaya repeatedly mentioned Lenin’s “nerves” and her attempts to stabilize him emotionally. In fact, according to Rappaport, Lenin later received a diagnosis of “neurasthenia—a catchall for stress.”⁸⁷ Arguably, Krupskaya bore more than just a “double” burden. She constantly remained present for Lenin—always at the expense of her health and career.

For instance, one poignant example of Krupskaya’s emotional labor exists in her memoir. While Lenin was in prison in the mid-1890s, prior to

⁸⁵ Oakley, *Forgotten Wives*, 194.

⁸⁶ Rappaport, *Conspirator*, 107-108.

⁸⁷ *Ibid.*, 99.

Krupskaya's arrest, he succumbed to what Krupskaya described as "the prison dumps." In a letter, he told Krupskaya about a window near which prisoners passed when the guards brought them out for exercise. He asked Krupskaya to wait on the street across from the window, hoping to catch a "momentary glimpse" of her. Krupskaya described how she "stood on the pavement for a long time several days running [sic]." Although the plan ultimately failed for one reason or another—she could not remember why—such instances display her integral supportive role for Lenin. Additionally, her emotional labor at times merged with party work. Throughout Lenin's stints in prison and exile in the late 1890s, she wrote to him "about everything...[she] saw and heard," keeping him informed about party operations.⁸⁸

Moreover, Krupskaya simultaneously held responsibility for the brunt of domestic labor. This included arranging housing for her and Lenin as they moved across Europe, forging Lenin's documents, and typical tasks such as cooking and cleaning. In many respects, Lenin found himself helpless without her. Once Krupskaya's period of exile ended and upon her subsequent arrival in Munich in 1901—where she would assume her position at *Iskra*—she discovered that Lenin had been living without a passport.⁸⁹ As usual, she immediately procured papers for him. Rappaport describes that, despite Lenin's relative self-sufficiency, "there is no doubt that Nadya's [Krupskaya's] presence was hugely calming and reassuring for him."⁹⁰ Prior to her arrival, "he had been living on cups of tea from a tin

⁸⁸ Krupskaya, *Reminiscences of Lenin*, 28, 31.

⁸⁹ *Ibid.*, 59.

⁹⁰ Rappaport, *Conspirator*, 37.

mug and his landlady's dodgy food."⁹¹ Only occasionally did Krupskaya get a reprieve from her domestic burdens: "When money allowed, Nadya sometimes offloaded some of her domestic duties and paid her landladies to change the beds and wash their dishes."⁹² However, Krupskaya also took on the burden of economizing and ensuring she and Lenin did not live beyond their meager means.⁹³ All the while, Lenin buried himself in his intellectual pursuits.

These instances were part of a continuous pattern in which Krupskaya shouldered both the practical and logistical burdens of their shared revolutionary life. As such, while domestic labor is traditionally framed as reproductive labor, Krupskaya's emotional and domestic labor directly contributed to the Bolshevik cause and Lenin's political productivity, thus, like productive labor, resulting in tangible outcomes. As Oakley describes, "What is construed as personal work done for a husband actually benefits those who enjoy the fruits of the husband's work."⁹⁴ Although Krupskaya never complained about her "enormous workload," her stoicism could not hide the effect it had on her emotional and physical health.⁹⁵

Krupskaya had struggled with health issues since childhood; however, they got increasingly worse throughout exile and continued to plague her until her death. As early as February 1900, when she arrived in Ufa, southwest of the Ural Mountains, to serve the remainder of her exile, her health began to decline.⁹⁶ She

⁹¹ Ibid.

⁹² Ibid.

⁹³ Krupskaya, *Reminiscences of Lenin*, 75.

⁹⁴ Oakley, *Forgotten Wives*, 199.

⁹⁵ Rappaport, *Conspirator*, 38.

⁹⁶ Ibid., 27.

needed Lenin's moral support, but he could not provide the same support she had provided for him, as he remained too immersed in political work. Then, as she detailed in her memoir, in early 1913, in Poland, her health deteriorated further:

[M]y heart became tricky, my hands trembled, and I suffered from general debility...The doctor said my case was serious—my nerves and heart were out of order as a result of goitre [sic]...in the state I was in I was hardly fit for work.⁹⁷

Her health steadily continued to decline, until, on July 10th, 1913, she underwent an operation—a thyroidectomy—without general anesthetic as a result of the potential complications of her irregular heartbeat.⁹⁸

Despite this trauma, Krupskaya never slowed down. Rappaport describes how “Nadya was anxious to get back to her party work and Lenin was not inclined to dissuade her.”⁹⁹ Thus, although her doctor ordered her to spend another fortnight recovering from the operation, she wrote, “we got word from Poronino [Poronin, Poland] that a lot of urgent business was waiting to be attended to...which induced us to go back.”¹⁰⁰ According to Rappaport, she “fiercely resisted all requests to cut back on party work and go to the doctor for regular checks.”¹⁰¹ According to Bobrovskaya's testimony, such behavior remained constant for the rest of Krupskaya's life—not even her health could impede upon her dedication to the revolution. Bobrovskaya detailed how, even in 1937, at age 68, “it was very difficult to tear

⁹⁷ Krupskaya, *Reminiscences of Lenin*, 263.

⁹⁸ Rappaport, *Conspirator*, 237.

⁹⁹ Ibid.

¹⁰⁰ Krupskaya, *Reminiscences of Lenin*, 263.

¹⁰¹ Rappaport, *Conspirator*, 237-238.

Krupskaya away from her work, to make her rest and undergo medical treatment.”¹⁰² When she took breaks, she expressed profound guilt for being away from her work. In a letter, she admitted: “I feel very queer with no work to do—like a fish out of water.”¹⁰³

In this respect, Krupskaya resembled her husband: compulsively work-driven, almost to a fault. Interestingly, when male historical figures possess these qualities, historians attribute qualities of ruthlessness to them. For example, in his 1964 biography, *The Life and Death of Lenin*, Robert Payne describes Lenin as someone with a “fanatical will” who “reached a position of towering eminence in world history.”¹⁰⁴ Yet Krupskaya, someone just as dedicated, remains a mere footnote in history, with her obsession and devotion to her work framed as submission to Lenin.

However, with the above context, this traditional framework quickly shatters. Krupskaya’s dedication was to the revolution. While she cared for Lenin, she had achieved intellectual and political consciousness far before she met him. More than that, *she* did not define herself through the man she married—historians retrospectively imposed this onto her story, as Oakly describes, “corralling her in that vast array of preconceptions about what it means to be the wife of a famous man.”¹⁰⁵ Such deeply gendered retellings of women’s histories skew their stories in favor of “great men.” Reframing Krupskaya’s story is not an effort to glorify her or overstate her achievements. It is an attempt

¹⁰² Bobrovskaya, *Lenin and Krupskaya*, 45.

¹⁰³ Ibid.

¹⁰⁴ Robert Payne, *The Life and Death of Lenin* (New York: Simon and Schuster, 1964), 13.

¹⁰⁵ Oakley, *Forgotten Wives*, 98.

to ameliorate the mistakes in the deeply gendered narratives of Western Soviet historiography. She was human—at times she succeeded, and at times she failed. She had flaws; however, this does not diminish her importance.

Through studies of women like Krupskaya, Soviet historians can gain a better understanding of the lives of female revolutionaries, expanding the scope and nuance of historical analysis. Her case exemplifies how reexamining historical narratives through a gender-conscious lens can reveal significant blind spots in our historical understanding. Such methodological approaches and frameworks challenge historians to reconsider how gendered assumptions have shaped the narratives of women's lives, expanding past the scope of Soviet history. Krupskaya's life story serves as a testament to the significance of the numerous women who remain mere footnotes in history. However, despite the historical narrative surrounding her life, the tangible results of Krupskaya's work speak for themselves—far more powerfully than the reductive title of 'Lenin's wife' ever could. This study is not about 'Lenin's wife'; it is about a revolutionary, an educator, and a name that demands recognition and respect: Nadezhda Konstantinovna Krupskaya.

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The Relationship Between Phthalates and Impaired Reproductive Function in Females

Abigail Goldman

Abstract

The current global decline in fertility rates can be attributed in part to endocrine-disrupting chemicals (EDCs). One such example is a group of plasticizers called phthalates, which pose a significant reproductive risk for females due to their structural similarity to estradiol and their prevalence in personal care products. Findings from cell-based experiments, animal models, and epidemiological studies indicate that phthalate exposure impairs fertility and disrupts overall reproductive function in females. Phthalates interfere with the actions of critical reproductive hormones like estradiol and progesterone by dysregulating steroidogenesis and receptor-mediated signaling mechanisms. They are also linked to antral follicle apoptosis, increased primary ovarian insufficiency (POI) risk, and DNA damage in egg cells. In terms of pregnancy, phthalates disrupt placental formation and increase the risk of miscarriage and premature birth. Companies have begun replacing phthalates with safer alternative plasticizers such as bis-2-ethylhexyl terephthalate (DEHT), diisononyl cyclohexane-1,2-dicarboxylate (DINCH), and epoxidized soybean oil (ESBO). While preliminary findings suggest that these

compounds lack phthalates' adverse reproductive effects, there are some notable research gaps and issues with source quality. Overall, this paper advocates for limiting the use of phthalates in consumer products to help alleviate the current fertility crisis. In addition, the phthalate studies described in this paper can serve as models for a more rigorous examination of phthalate alternatives, other EDCs, and female reproductive health as a whole.

Introduction

In recent years, the world has experienced an alarming drop in fertility rates. The global total fertility rate has declined from five children per female in 1950 to 2.2 children per female in 2021 (GBD 2021 Fertility and Forecasting Collaborators 2024). This trend poses drastic demographic and economic implications, with 97% of countries projected to have insufficient fertility rates to maintain their population by 2100 (GBD 2021 Fertility and Forecasting Collaborators 2024). The global decrease in fertility is often attributed to societal factors, but biological mechanisms also play a role. For example, about 17.5% of adults worldwide experience infertility (the inability to achieve a pregnancy after at least a year of sexual intercourse), with similar rates across developed and developing countries (World Health Organization 2023). Thus, when addressing the fertility crisis, it is also important to remedy possible causes of infertility and pregnancy complications. One such example is endocrine-disrupting chemicals (EDCs), which include bisphenol A, phthalates, polychlorinated biphenyls, polybrominated diethyl ethers, dioxins, pesticides, and phytoestrogens (Czarnywojtek et al. 2021). Because EDCs have well-documented adverse effects on both the male and female reproductive system, they represent a potential contributing factor to reduced fertility rates. Therefore, the continued prevalence of EDCs may exacerbate current demographic trends.

Phthalates, a group of plasticizers used in polyvinyl chloride (PVC) materials (Czarnywojtek et al. 2021), are of particular interest due to their ubiquitous presence in consumer products, in the environment, and in the human body. Although phthalates also impair

reproductive functions in males, these EDCs are arguably a greater concern for females due to their structural similarity to estradiol. Females are also more commonly exposed to phthalates: They comprise a greater share of occupations that involve high phthalate exposure, such as hairdressing (Kolena et al. 2017), and many personal care products targeted to women contain high phthalate levels (Parlett et al. 2013; Jang et al. 2024) Thus, it is important to examine the effects of phthalate exposure in females in the context of the current fertility crisis.

This paper analyzes the implications of phthalate exposure for female reproductive functions, explores the mechanisms by which phthalates may contribute to declining fertility rates, and advocates for the use of non-phthalate plasticizers in consumer products. The structure, metabolism, and environmental prevalence of phthalates are described in more detail to provide a basis for this line of investigation. This review then examines *in vitro* and *in vivo* experiments and epidemiological studies to demonstrate the correlation between increased phthalate exposure and adverse female reproductive outcomes. The experimental evidence indicates that phthalates induce dysregulation of the endocrine system, a decrease in ovarian reserve, impaired fertilization, disruptions to placental formation, pregnancy loss, and premature birth. Epidemiological studies are also included to establish that phthalate exposure is correlated with reduced fertility and pregnancy complications in humans. Finally, this review summarizes current findings regarding safer phthalate alternatives and their potential endocrine effects. Overall, this paper presents a comprehensive synthesis of experimental and observational data illustrating phthalates' deleterious

reproductive effects as well as a framework for expanded research into phthalate alternatives, other EDCs, and female reproductive health as a whole.

Background

In order to understand the basis of phthalate-induced reproductive toxicity, it is necessary to first examine the structure and metabolism of these chemicals. Phthalates are esters of 1,2-benzene dicarboxylic acid that differ by their side chains (Hlisníková et al. 2020). As shown in Figure 1, phthalates can mimic estradiol because they contain an aromatic ring, which allows them to disrupt reproductive functions in females (Hlisníková et al. 2020). Upon entering the gastrointestinal tract, phthalates are hydrolyzed to monoesters by lipase enzymes (Panagiotou et al. 2021). These primary metabolites may be converted to secondary metabolites via further hydrolysis and oxidation by cytochrome P450 enzymes (Panagiotou et al. 2021). Phthalate metabolites are subsequently excreted in urine (Panagiotou et al. 2021). Figure 2 illustrates the metabolism of di(2-ethylhexyl) phthalate (DEHP), the most common phthalate and the one most frequently associated with adverse reproductive effects. DEHP is first converted to the primary metabolite mono(2-ethylhexyl) phthalate (MEHP) and then to secondary metabolites, including mono(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP), mono(2-ethyl-5-oxohexyl) phthalate (MEOHP), and mono-(2-ethyl-5-carboxypentyl) phthalate (MECPP) (Hlisníková et al. 2020). As a result of this rapid conversion, the endocrine-disrupting effects of phthalates have largely been attributed to their metabolites.

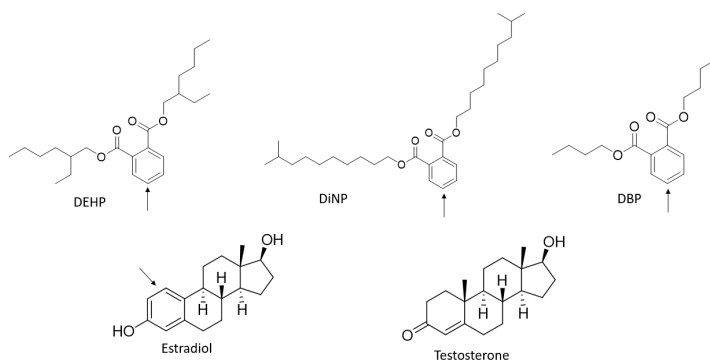


Figure 1. Structures of the common phthalates di(2-ethylhexyl) phthalate (DEHP), dibutyl phthalate (DBP), and di-iso-nonyl phthalate (DiNP) in comparison to estradiol and testosterone. While the three phthalates have varying side chains, they are all esters of 1,2-benzene dicarboxylic acid, also known as phthalic acid. Phthalates and estradiol are structurally similar because they both contain an aromatic ring (indicated with an arrow). In contrast, phthalates are structurally distinct from testosterone, the primary male reproductive hormone, which does not contain an aromatic ring. Structures were drawn using ChemDraw.

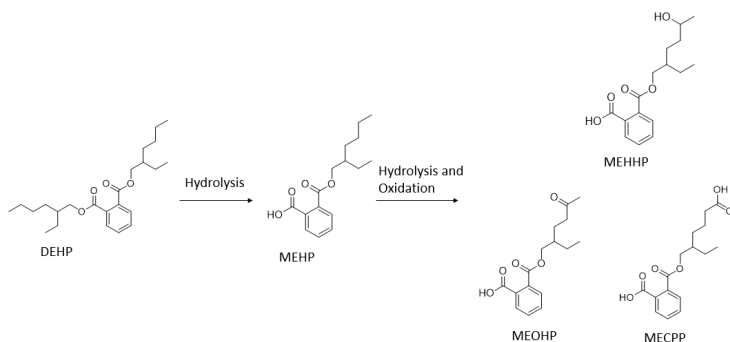


Figure 2. Metabolism of di(2-ethylhexyl) phthalate (DEHP). DEHP is first hydrolyzed to its primary metabolite mono(2-ethylhexyl) phthalate (MEHP); in other words, one alkyl ester side chain is converted to a carboxylic acid. MEHP subsequently undergoes further hydrolysis and oxidation reactions to produce a variety of secondary metabolites. Products of MEHP oxidation reactions include mono(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP), mono(2-ethyl-5-oxohexyl) phthalate (MEOHP), and mono-(2-ethyl-5-carboxypentyl) phthalate (MECPP). Structures were drawn using ChemDraw.

Due to the prevalence of phthalates in plasticized materials and in the environment, humans are routinely exposed to these chemicals. Phthalates are used in personal care products, medical devices, pharmaceuticals, food packaging, and plastic toys, among other applications (Czarnywojtek et al. 2021; Panagiotou et al. 2021). Because phthalates are not covalently bound to plastics, they can leach out of products, accumulate in humans, and contaminate the environment (Panagiotou et al. 2021). Numerous studies have found that increased use of personal care products results in higher levels of phthalate exposure that can be

detected by measuring phthalate metabolite levels. For example, using a sample of 337 pregnant women from the United States, Parlett et al. (2013) discovered that increased use of perfume was associated with statistically significant increases in mono-n-butyl phthalate (MnBP), mono-isobutyl phthalate (MiBP), and monoethyl phthalate (MEP) exposure, and increased use of lipstick, blush, and eye makeup was associated with statistically significant increases in monomethyl phthalate (MMP) exposure. Similarly, a study of 3779 Korean adults found that increased use of perfumes, hair products, body cleansers, makeup products, nail polish, antibacterial products, and air fresheners was associated with increased levels of various phthalate metabolites in urine (Jang et al. 2024). Many of these personal care products are targeted to women, indicating that females are at greater risk for phthalate exposure. In addition to commercial products, humans are exposed to phthalates through dietary intake of foods and beverages contaminated with phthalates from plastic packaging (Giuliani et al. 2020). Humans can be exposed to phthalates through inhalation, injection, and dermal application (Hlisníková et al. 2020). Moreover, humans can be directly exposed to phthalates via environmental sources such as air, soil, and bodies of water (Giuliani et al. 2020).

Given the numerous opportunities for exposure, it is no surprise that phthalate metabolites are common in the general population. For example, in National Health and Nutrition Examination Surveys ranging from 2001 to 2010, benzylbutyl phthalate (BBzP), di-n-butyl phthalate (DnBP), and diethyl phthalate (DEP) metabolites were detected in 98% of participant samples, and DEHP, di-n-octyl phthalate (DnOP), di-iso-nonyl

phthalate (DiNP), and di-iso-decyl phthalate (DiDP) metabolites were detected in 89% of participant samples (Zota et al. 2014). Phthalates have been detected in liver, lung, and adipose tissue as well as blood serum, urine, ovarian fluid, and amniotic fluid. Overall, the general population's estimated daily exposure to DEHP is 3 to 30 $\mu\text{g/kg}$ (Panagiotou et al. 2021). The detection of phthalates in ovarian and amniotic fluid is particularly concerning since it suggests prenatal exposure (Panagiotou et al. 2021). Because phthalates are so prevalent in the human body due to their widespread use, they have the potential to significantly impair reproductive function. Therefore, their endocrine-disrupting effects merit considerable attention.

Hormone Disruptions

Across *in vitro* (cell-based), *in vivo* (animal-based), and epidemiological studies, phthalates are associated with decreases in levels of critical reproductive hormones like estradiol and progesterone as well as disruptions to steroid hormone synthesis and signaling mechanisms. In females, estradiol is necessary for normal reproductive function; it stimulates the luteinizing hormone (LH) surge that triggers ovulation and corpus luteum formation, makes the uterine endometrial lining suitable for embryo implantation, and stimulates mitosis of the granulosa cells that comprise ovarian follicles. Progesterone enables females to maintain a pregnancy by preparing the uterus for implantation and delaying parturition (childbirth) until the fetus has finished developing. Thus, a decrease in estradiol and progesterone can impair reproductive function. In their study of DEHP-induced apoptosis (programmed cell death) in cultured antral follicle cells,

Hannon et al. (2015) observed that exposure to 1 µg/mL, 10 µg/mL, and 100 µg/mL DEHP concentrations resulted in decreases in progesterone and estradiol levels. Similarly, Patiño-García et al. (2018) noted decreases in progesterone and estradiol levels in mice that were exposed prenatally and postnatally to 1 mg/kg/day and 10 mg/kg/day doses of a mixture of DEHP, dibutyl phthalate (DBP), benzyl butyl phthalate (BBzP), and the alkylphenols 4-nonylphenol (NP) and 4-tert-octylphenol (OP). Patiño-García et al. also demonstrated that the F1 generation's prenatal exposure to the 1 mg/kg/day dose decreased estradiol levels in their female offspring, suggesting that phthalate exposure can have cross-generational effects.

Epidemiological studies also demonstrate the inverse correlation between phthalate exposure and estradiol levels. For example, Cao et al. (2020) examined hormone disruptions as one variable in their study of phthalate exposure and primary ovarian insufficiency (POI, previously known as premature ovarian failure). The authors only analyzed hormone levels in their control group because POI itself is associated with hormone disruptions. Among the 246 women lacking a POI diagnosis, the highest quartiles of MnBP, MMP, total low molecular weight (LMW) phthalate, total high molecular weight (HMW) phthalate, and total phthalate exposure were significantly associated with decreased estradiol levels (Cao et al. 2020). Although this data is correlational, the experimental evidence from Hannon et al. and Patiño-García et al. suggests that phthalates may be responsible for the observed changes in hormone levels in the control group.

In addition to altering steroid hormone levels, phthalates can disrupt steroidogenesis (the synthesis of

steroids from a cholesterol precursor) by altering the mRNA levels of various enzymes in ovarian tissues that are involved in estradiol and progesterone synthesis. The functions of some of these steroidogenic enzymes are described in Table 1. All five enzymes listed in Table 1 produce precursors for estradiol synthesis or estradiol itself, and STAR and Cyp11a1 produce precursors for progesterone synthesis. Thus, decreased transcription of these enzymes would also decrease production of progesterone and/or estradiol. Hannon et al. observed that exposure of antral follicle cells to DEHP resulted in a decrease in the mRNA levels of Cyp11a1, Cyp17a1, Hsd17b1, and Cyp19a1. Likewise, Patiño-García et al. determined that both concentrations of their EDC mixture decreased mRNA levels of Cyp19a1 in mice. However, there are some discrepancies between the two studies: DEHP exposure did not affect STAR levels in Hannon et al.'s study, and both doses of the EDC mixture in Patiño-García et al.'s study decreased STAR levels, increased Cyp17a1 levels, and did not affect Hsd17b1 levels. These differences could result from the timing of exposure, the specific chemicals used, and the differences between *in vitro* and *in vivo* conditions. Additionally, Patiño-García et al. noted that the increase in Cyp17a1 levels could be a compensatory effect to increase androstenedione levels in response to lower progesterone levels. Nonetheless, the overall trend suggests that phthalates impair steroidogenesis, which could account for phthalate-induced decreases in estradiol and progesterone levels.

Table 1. Functions of various enzymes involved in steroidogenesis.

Name	Function
Cytochrome P450 _{scc} /cholesterol side-chain cleavage enzyme (Cyp11a1)	Converts cholesterol to pregnenolone
Cytochrome P450 17a1 (Cyp17a1)	Converts pregnenolone to a dehydroepiandrosterone (DHEA) precursor and progesterone to an androstenedione precursor
17 β -hydroxysteroid dehydrogenase (Hsd17b1)	Converts androstenedione to testosterone and estrone to estradiol
Aromatase (Cyp19a1)	Converts testosterone to estradiol
Steroidogenic acute regulatory protein (STAR)	Transports cholesterol into the mitochondria

Information obtained from Patiño-García et al. (2018) and Hannon et al. (2015).

Phthalates can also impair the cellular response to reproductive hormones by acting as agonists or antagonists of hormone receptors or downregulating receptor expression. Agonists of hormone receptors

produce a response that mimics the hormone's biological actions, and antagonists of hormone receptors prevent the hormone from binding to the receptor, blocking the hormone's biological actions. Phthalates can act as agonists or antagonists due to their structural similarity to estradiol, which allows them to bind to estradiol receptors. In transfected cell lines, BzBP, DiDP, and di-n-pentyl phthalate (DnPP) acted as agonists of the estradiol receptors ER α and ER β , and 11 of the 15 phthalates tested acted as antagonists of these receptors when estradiol was present (Engel et al. 2017).

Antagonism of the estradiol receptors inhibits critical reproductive functions such as ovulation, embryo implantation, and antral follicle growth. Although the effects of estradiol receptor agonism are less intuitive, they may include disruptions to the menstrual cycle such as increased negative feedback on follicle-stimulating hormone (FSH), which promotes ovarian follicle development during the menstrual cycle's first phase. While phthalate metabolites did not act as agonists or antagonists on the estradiol receptors, MEHP and other DEHP metabolites were observed to be agonists of peroxisome proliferator-activated receptor γ (PPAR γ) (Engel et al. 2017). Activation of PPAR γ signaling decreases levels of aromatase and androgen precursors for estradiol; increases levels of 17 β -hydroxysteroid dehydrogenase type IV, which converts estradiol to the inactive estrone; and inhibits the conversion of cholesterol to pregnenolone, the precursor for progesterone (Komar 2005). PPARs can also act as competitive inhibitors of estradiol response elements and stimulate degradation of ER α (Komar 2005). In other words, PPAR γ receptor agonism is an indirect mechanism by which phthalate metabolites can disrupt

estradiol and progesterone synthesis and block estradiol's biological actions. PPAR γ signaling is also one mechanism by which phthalate metabolites may disrupt placental development, which will be discussed further below. Additionally, in Patiño-García et al.'s study, exposure to 10 mg/kg/day of the EDC mixture decreased mRNA levels of LH and FSH receptors, and exposure to both doses decreased estradiol receptor expression, which could further inhibit the cellular response to these hormones. Thus, by inhibiting steroidogenesis and blocking the action of reproductive hormones, phthalates impair reproductive function.

Impaired Ovarian Function

Phthalates can disrupt typical ovarian functions that are essential for reproduction. For example, phthalates are associated with a decrease in antral follicle count (AFC), a measure for the number of oocytes (eggs) remaining in the ovaries and a marker of ovarian reserve. By reducing the AFC, phthalates reduce the amount of potential ovulatory events and thus inhibit reproduction. Hannon et al. observed that DEHP exposure inhibited the growth of antral follicle cells, and they elucidated the mechanisms by which DEHP induces follicle cell apoptosis. Exposure to DEHP increased the number of apoptotic bodies present in the cells; mRNA levels of the pro-apoptotic factors Bad, Bax, and Bok; and mRNA levels of the caspases Casp8 and Casp3, which execute apoptosis. Unexpectedly, DEHP exposure also increased the mRNA levels of cell cycle regulators and the anti-apoptotic factors Bcl2 and Bcl2l10. Upregulation of anti-apoptotic factors can be compensatory for increased apoptosis, which may explain this result (Hannon et al. 2015). In addition,

anti-apoptotic factors like Bcl2 can become pro-apoptotic after caspase cleavage (Hannon et al. 2015). Regardless, it is clear that DEHP exposure increases the rate of antral follicle cell apoptosis, which has drastic implications for the ovarian reserve.

Reductions in AFC resulting from phthalate-induced apoptotic effects have been observed in both mice and humans. Patiño-García et al. observed that both doses of their EDC mixture decreased the AFC in mice. They hypothesized that the lower dose inhibited the transition of preantral follicles to antral follicles, while the higher dose inhibited follicle growth in the antral stage. Additionally, a study of 215 women seeking infertility treatments revealed an inverse association between mean AFC and total and individual DEHP metabolites (Messerlian et al. 2016a). Total and individual DEHP metabolite exposure was also correlated with an increased risk of low AFC, which is defined as AFC less than or equal to 8. While the sample only includes women struggling with infertility, the trend observed in this study population does suggest that phthalate exposure may exacerbate existing infertility issues. Taken together, these studies suggest that the phthalate-induced apoptotic mechanisms observed by Hannon et al. may occur *in vivo*, leading to a decreased AFC that impairs reproductive function.

Phthalate exposure is also correlated with the incidence of POI, or a premature loss of ovarian function. Cao et al. found that the highest quartiles of MiBP, MEHHP, total LMW phthalate, total HMW phthalate, and total phthalate metabolite exposure were associated with higher odds ratios (ORs) for POI in a sample of 419 Chinese women, with a significant OR for MiBP. A phthalate-induced reduction in AFC may be

responsible for the increased risk of POI. Additionally, FSH levels were positively correlated with phthalate exposure in women without a POI diagnosis (Cao et al. 2020). Increased FSH levels in conjunction with decreased estradiol levels are characteristic of POI, as more FSH is secreted in response to the reduced ovarian reserve (Cao et al. 2020). Because a sufficient and accessible ovarian reserve is necessary for reproduction, the observed relationship between phthalate exposure, AFC, and POI provides further evidence that phthalate exposure can reduce fertility.

Impaired Fertilization

Even if ovulation succeeds despite reproductive disruptions, phthalates can inhibit meiosis and induce DNA damage in oocytes, thus preventing successful fertilization. This is illustrated by the research of Lu et al. (2019), in which female mice were given clinically relevant daily doses of DEHP prior to oocyte isolation. Compared to the control group, significantly fewer oocytes from mice exposed to DEHP successfully reached metaphase II. Lu et al. also examined the mechanisms by which DEHP impaired meiosis, reporting that DEHP exposure was associated with disorganized spindle formation, an increased incidence of chromosomal misalignment, and a decrease in levels of the cytoskeletal component actin. Moreover, DEHP exposure altered DNA methylation, histone methylation, and histone acetylation, and it increased levels of DNA-damaging reactive oxygen species (ROS), which increased the incidence of ROS-induced 8-oxo-7,8-dihydroguanine. DEHP also downregulated the protein Juno, which facilitates sperm-egg fusion. When all of these factors are considered, it is

unsurprising that DEHP exposure resulted in a lower percentage of oocytes being successfully fertilized compared to the control group (Lu et al. 2019). Thus, exposure to phthalates like DEHP can inhibit fertilization, the most critical step for reproduction.

Phthalate-induced impairment of fertilization has also been observed *in vivo*. Niermann et al. (2015) reported that 22.2% of mice prenatally exposed to 20 µg/kg/day of DEHP required more than 5 days to become pregnant at the age of 3 months, which was significantly greater than the control group. The DEHP-induced oocyte damage noted by Lu et al. may have decreased the number of healthy oocytes in these mice, reducing the potential for successful fertilization events and resulting in pregnancy delays. However, this dose of DEHP did not affect the time required to become pregnant at 6 and 9 months of age (Niermann et al. 2015). One possible explanation for this time-dependent effect is that the mice were only exposed to DEHP prenatally rather than both prenatally and postnatally, which would be more common in humans. It is significant, on the other hand, that the 20 µg/kg/day dose inhibited fertilization at the age of 3 months because this dose falls within typical human exposure levels (Niermann et al. 2015). Hence, Niermann et al.'s results suggest that the mechanisms of oocyte damage reported by Lu et al. likely result in impaired fertilization *in vivo*.

Mechanisms of Pregnancy Disruption

In addition to inhibiting fertilization, phthalates can disrupt pregnancy, leading to early pregnancy loss and premature birth. *In vitro* and *in vivo* studies suggest that phthalates impair pregnancy by disrupting placental

formation. For example, Shoaite et al. (2019) studied the interaction of MEHP with PPAR γ —which regulates placental development as well as steroidogenesis—using cells derived from human placentas. PPAR γ regulates extravillous cytotrophoblast invasion of the uterine endometrium as well as a process called syncytialization, in which mononucleated villous cytotrophoblasts (trophoblastic stem cells) differentiate into more specialized syncytiotrophoblasts that fuse into a continuous layer connecting the maternal and fetal circulatory systems (Wieser et al. 2008). Shoaite et al. found that MEHP acted as a PPAR γ antagonist at concentrations of 0.1 μ M and 1 μ M, decreasing syncytialization. In contrast, 10 μ M MEHP acted as a PPAR γ agonist, increasing syncytialization. This nonmonotonic dose response—where a drug’s effect may increase or decrease with increasing dose—is typical of EDCs (Vandenberg et al. 2012). Similarly, Engel et al. observed that MEHP acted as a PPAR γ agonist at concentrations greater than 10 μ M, although they did not test concentrations below 2.5 μ M. Shoaite et al. also determined that all concentrations of MEHP resulted in lower levels of human chorionic gonadotrophin (hCG)—a placental hormone produced during pregnancy—as well as disruptions to the mitogen-activated protein kinase (MAPK) pathway, which is essential for cytotrophoblast differentiation. Therefore, higher levels of MEHP may inhibit placental development through these mechanisms rather than disrupting syncytialization (Shoaite et al. 2019). Regardless of the precise mechanism, it is clear that MEHP inhibits proper placental formation, which can have dire consequences for fetal development.

Adverse effects of phthalates on the placenta have also been observed *in vivo*. Bhurke et al. (2023) investigated how exposure to 20 µg/kg body weight of DiNP in the first seven days of gestation impacts placental development in mice. They discovered that DiNP exposure did not affect embryonic implantation in the endometrium, but it did inhibit decidualization and angiogenesis compared to the control group. Decidualization refers to the differentiation of fibroblastic stromal cells into secretory decidual cells that promote angiogenesis—the formation of new blood vessels in the uterus—and trophoblast differentiation (Bhurke et al. 2023). Similar to Shoaib et al.'s study, DiNP exposure inhibited syncytialization, in this case resulting in lower placental weight (Bhurke et al. 2023). Evidently, the mechanisms of phthalate-induced placental abnormalities observed *in vitro* also occur in mice, suggesting that phthalates disrupt pregnancy *in vivo*.

Pregnancy Complications

Elevated rates of pregnancy loss and preterm birth have been observed in mice as a result of phthalate exposure, and correlational data in humans support these relationships. In Bhurke et al.'s study, mice exposed to DiNP lost 30% of their pups and delivered pups 18 to 24 hours earlier than the control group. Similarly, Patiño-García et al. observed a significant decrease in gestational length for mice exposed to both doses of their EDC mixture compared to the control group as well as a statistically non-significant decrease in the percentage of mice who delivered offspring. The lower dose of the EDC mixture also decreased the litter size (Patiño-García et al. 2018), suggesting that the mixture

increased fetal mortality. Moreover, both Bhurke et al. and Patiño-García et al. reported decreases in offspring weight. In Bhurke et al.'s experiment, fetuses in the DiNP-exposed group had significantly lower weights at 18 days of gestation and 1 day after parturition compared to the control group. Likewise, Patiño-García et al. observed that both doses of their EDC mixture resulted in a significant decrease in pup birth weight, and this decrease persisted to 21 days after parturition in pups born to mice that received the lower dose. This reduction in weight may be a result of impaired placental nutrient transfer (Bhurke et al. 2023) or increased premature birth rates, and it could heighten the risk of mortality after birth. Overall, phthalate exposure reduces the probability that a conception will result in the successful delivery of healthy pups, decreasing fertility rates in mice.

Phthalate exposure is also correlated with an increased risk of pregnancy loss and premature birth in humans. In a study of 256 women seeking fertility treatments, Messerlian et al. (2016b) assessed whether phthalate exposure is associated with pregnancy loss, evaluating exposure based on two urine samples collected at different follicular phase timepoints before conception. They observed that higher exposure to total and individual DEHP metabolites significantly increased the risk ratio for biochemical pregnancy loss—defined as loss of a pregnancy only detected by a blood test—compared to the lowest quartile of exposure. In addition, higher quartiles of these metabolites were associated with moderate increases in risk ratios for total pregnancy loss—defined as pregnancy loss before 20 weeks gestation, including biochemical loss—with a significant trend for MEHHP and MEOHP. Although this study was limited to women pursuing assisted

reproduction, the authors reported that the overall rates of pregnancy loss in this population were comparable to women who were able to conceive naturally. Combined with the results obtained by Messerlian et al. (2016a), the effects observed in this study population suggest that phthalate exposure can exacerbate existing problems with fertility. Another study of 128 Danish women found that MEHP exposure was significantly higher for women who experienced a pregnancy loss than for women who successfully delivered (Toft et al. 2012). Although the highest tertiles of other phthalate metabolites were also associated with pregnancy loss, these ORs were not significant (Toft et al. 2012). The results of this study thus indicate that Messerlian et al.'s findings can also be applied to a more general population. Finally, Ferguson et al. (2014) investigated the relationship between phthalate exposure and the risk of preterm birth in 482 women who delivered at the Brigham and Women's Hospital in Boston. They observed significantly higher levels of MEHP, MECPP, monobutyl phthalate (MBP), and total DEHP metabolites in mothers who gave birth prematurely compared to the control group. Additionally, the authors reported significantly increased ORs associated with total preterm births for MEHP, MECPP, and total DEHP metabolites as well as significantly greater ORs associated with spontaneous (unplanned) preterm births for MEHP, MEOHP, MECPP, total DEHP metabolites, MBzP, MBP, and MCP. ORs also significantly increased in a dose-dependent manner for MEHP, MECPP, total DEHP metabolites, and MBP; for example, women in the highest quartile of MEHP exposure were four times as likely to give birth prematurely compared to women in the lowest quartile. Because preterm birth increases the risk of infant

mortality, the positive correlation between phthalate exposure and premature birth represents another mechanism by which phthalates can impair fertility. Overall, these epidemiological studies replicate the trends observed in mice, suggesting that phthalate exposure may contribute to the adverse pregnancy outcomes observed in humans.

Alternatives to Phthalates

Due to their endocrine-disrupting effects, the presence of phthalates in consumer products poses a significant risk to the female reproductive system. Thus, it is desirable to find alternatives to these chemicals that can also act as plasticizers without impairing fertility. A review by Bui et al. (2016) describes several varieties of phthalate alternatives, many of which share physical properties with phthalates like DEHP, making them suitable plasticizers. The authors identified twenty phthalate alternatives as having a higher derived no-effect level than DEHP, and almost all had a risk ratio below 1, which represents little to no risk to human health. Many of these phthalate alternatives are already being employed in consumer products (Bui et al. 2016). Three phthalate alternatives—bis-2-ethylhexyl terephthalate (DEHT), diisononyl cyclohexane-1,2-dicarboxylate (DINCH), and epoxidized soybean oil (ESBO)—are examined as a case study, and their structures are shown and compared to DEHP in Figure 3.

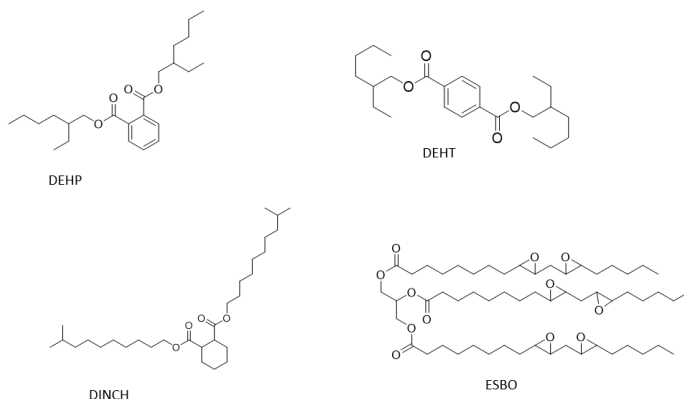


Figure 3. Structures of three alternative plasticizers in comparison to DEHP. Bis-2-ethylhexyl terephthalate (DEHT) is para-substituted (or 1,4-substituted), while DEHP is ortho-substituted (or 1,2-substituted). Diisononyl cyclohexane-1,2-dicarboxylate (DINCH) lacks the aromatic ring that DEHP shares with estradiol. ESBO is a triglyceride that shares little structural similarity with DEHP. Structures were drawn using ChemDraw.

DEHT bears structural similarity to phthalates but lacks their adverse reproductive effects. In contrast to phthalates, which are ortho-substituted, DEHT is a terephthalate with a para-substituted aromatic ring (Bui et al. 2016). DEHT is used in numerous industrial products such as plastic toys, pavement, floor mats, and beverage caps (Bui et al. 2016). This chemical is not considered to be genotoxic, carcinogenic, developmentally toxic, or disruptive to the thyroid and adrenal systems; most importantly, it does not act as an agonist or antagonist of estradiol receptors (Harmon and Otter 2022). One cross-generational *in vivo* study found that prenatal and postnatal DEHT exposure did not affect the fertility indices, reproductive organ weights, estrous cycle length, gestation length, or AFC of female rats

(Faber et al. 2007), in stark contrast to what has been observed with DEHP exposure. It is important to note, however, that all three generations of rats exposed to 1.0% DEHT experienced significant decreases in body weight and feed consumption compared to the control group (Faber et al. 2007). Moreover, this research was sponsored by the Eastman Chemical Company, a manufacturer of DEHT (Eastman Chemical Company 2014), representing a potential conflict of interest. More *in vivo* studies would be necessary to confirm that DEHT is not toxic to the female reproductive system.

DINCH is another phthalate alternative that does not appear to exert significant endocrine effects. It is also a diester but lacks an aromatic ring (Bui et al. 2016), which is the crucial structure that allows phthalates to mimic estradiol. DINCH is used in medical devices, toys, and food packaging materials (Bui et al. 2016). This chemical did not affect fetal testosterone levels *in vivo* (Harmon and Otter 2022), and it did not significantly affect steroid synthesis or activate ER α , ER β , or PPAR γ *in vitro* (Engel et al. 2018). Although some DINCH metabolites activated or inhibited hormone receptors *in vitro*, these effects occurred at concentrations higher than what has been observed in humans (Engel et al. 2018). Regulatory studies of DINCH have found that it does not induce any adverse developmental or reproductive effects in animals (Harmon and Otter 2022). While DINCH exposure led to thyroid tumors in animals, the mechanism by which this occurs is not relevant to humans (Harmon and Otter 2022). Two studies have examined the endocrine effects of DINCH exposure in women seeking fertility treatments. Using a sample of 113 women seeking care at a Massachusetts fertility clinic, Mínguez-Alarcón et

al. (2016) found that DINCH metabolite concentrations above the limit of detection were associated with decreased estradiol levels and total oocyte yields, and this relationship was stronger for women over 37 years old. However, the researchers obtained p-values of borderline statistical significance, suggesting that any differences in estradiol levels and oocyte yields should not be attributed to DINCH exposure. Another study explored the relationship between DINCH exposure and ovarian reserve among 657 women seeking fertility care at two medical universities in China (Jiang et al. 2024). In this study, individual DINCH metabolites did not affect AFC but did increase FSH levels (Jiang et al. 2024). While preliminary findings seem promising, more research is needed to clarify the effects of DINCH on the female reproductive system in animal models and to replicate the trends observed in epidemiological studies.

ESBO is unique in that it is a biopolymer derived from soybean oil, which makes it structurally distinct from both phthalates and estradiol (Bui et al. 2016). It is used in closure gaskets and polymer coatings for glass jars (Bui et al. 2016). ESBO does not have carcinogenic or mutagenic effects, and it did not induce developmental or reproductive toxicity in regulatory studies (Harmon and Otter 2022). While no adverse endocrine effects have been observed for this plasticizer in previous *in vivo* studies that focused on other systems (Harmon and Otter 2022), studies of ESBO centered specifically on the endocrine system have yet to be performed.

Plasticizers like DEHT, DINCH, and ESBO have emerged as promising alternatives to phthalates; they are nontoxic and do not appear to exert endocrine-disrupting effects. Thus, their use in consumer

products should be encouraged based on the available data. Nevertheless, there are some gaps in the research surrounding these phthalate alternatives. Few *in vivo* studies of these plasticizers have focused on the endocrine system and reproduction specifically, and female animals are underrepresented. Faber et al. (2007) provided the strongest evidence that DEHT lacks DEHP's reproductive toxicity, but the manufacturer's involvement raises concerns with regard to credibility. Epidemiological studies of DEHT and ESBO have not been performed, so one cannot conclude whether these plasticizers are associated with adverse reproductive outcomes in humans. While the two epidemiological studies of DINCH suggest that it does not impair fertility, these studies did not explore other outcomes such as POI diagnoses, pregnancy loss, and premature birth, all of which are associated with phthalate exposure. Researchers should endeavor to close these gaps so that these polymers can be confirmed as safe and viable phthalate alternatives.

Conclusion

In vitro, *in vivo*, and epidemiological studies indicate that phthalates fit their classification as EDCs by exerting harmful effects on the reproductive system in females. Phthalates interfere with hormonal processes by decreasing estradiol and progesterone levels, inhibiting steroidogenesis, and interacting with hormone receptors. This dysregulation manifests as impaired ovarian function characterized by reduced AFC and an increased rate of POI diagnoses. Phthalates also interfere with oocyte meiosis and induce DNA damage in oocytes, inhibiting successful fertilization. Each of these mechanisms can contribute to infertility, a phenomenon

replicated in epidemiological studies that show correlations between phthalate exposure, decreased estradiol levels, and reduced ovarian reserve. Phthalates also disrupt pregnancy by impairing placental formation, resulting in elevated rates of pregnancy loss and premature birth that have been detected in both mice and humans. Therefore, due to the strong link between phthalates and reduced fertility, the use of these plasticizers should be limited.

Addressing the fertility crisis and its dire demographic consequences requires wide-reaching solutions that encompass societal and economic factors aside from biological causes. However, recognizing the endocrine-disrupting effects of phthalates in females and seeking to limit their use is a key step toward improving fertility rates, especially given the ubiquitous presence of phthalates in the environment. Companies should strive to replace phthalates in their products with alternative plasticizers such as DEHT, DINCH, and ESBO. In the absence of action by manufacturers, consumers should be made aware of the dangers of phthalates and should be encouraged to seek phthalate-free products. Furthermore, since phthalates are a potential contributing factor to infertility and pregnancy complications, physicians should take high phthalate exposure into account when treating females confronting these issues. These regulatory and educational measures will help mitigate phthalates' harmful effects and protect the fertility of future generations.

Beyond the fertility crisis, the study of phthalates provides valuable implications for future research regarding EDCs and reproductive endocrinology. Preliminary toxicology data and isolated

studies suggest that alternative plasticizers like DEHT, DINCH, and ESBO are safer than phthalates, so their incorporation into consumer products should be encouraged. However, phthalates are recognized as EDCs due to a robust body of evidence that includes numerous outcomes across all stages of reproduction, a variety of experimental and observational settings, and findings replicated across multiple studies and model systems. Until alternative plasticizers undergo the same level of rigorous study, one cannot eliminate the possibility of endocrine-disrupting effects. By outlining typical measures of phthalates' reproductive toxicity, this paper provides a framework by which researchers can evaluate the potential risks of non-phthalate plasticizers and confirm that they are viable phthalate alternatives. It is also important to note that phthalates are just one example of the broader group of EDCs. Like phthalates, these chemicals are all highly prevalent in consumer products. Many of the phthalate studies presented in this paper could be adapted to examine the other EDCs as well, strengthening the overall body of evidence surrounding these chemicals' deleterious reproductive effects. This paper's holistic approach to phthalates also serves as a model for synthesizing studies of other EDCs in public health campaigns aimed at manufacturers and consumers. Finally, findings regarding phthalates' reproductive toxicity should be understood in the context of not only the fertility crisis but also female reproductive health as a whole. Phthalates' mechanisms of action provide insight into how endocrine disruptions can impair female reproductive function on a general basis, improving the scientific understanding of the precise biological processes necessary for successful reproduction. Similar disruptive mechanisms may be

inherent to endocrine disorders and other biological causes of reduced fertility. Thus, continued study of phthalates and other EDCs is essential from both a sociological and scientific perspective. Knowledge of these chemicals' reproductive effects and preventative measures to reduce EDC exposure will help reverse the global decline in fertility rates and will ultimately help safeguard female reproductive health.

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Vaccine Equity Through New Science and Global Economics

Ashley Kibel

Abstract

This paper details the components of vaccine creation, manufacturing, mRNA technology, and inter-governmental organizations to achieve global vaccine equity. Viral vaccines are created using weakened viruses or components of the virus, known as antigens. Exposure to these antigens enhances immunity to a specific pathogen. High vaccination rates have proven to be one of the most effective means of eradicating diseases. For this reason, international attention has turned to expanding vaccine production in low-income regions for greater vaccine access. In particular, the COVID-19 pandemic made stark the need for worldwide vaccine coverage to prevent or minimize any future pandemics. Two pharmaceutical companies, BioNTech (Pfizer) and Moderna, have begun establishing facilities in low-income countries that will offer a broad range of vaccines using the adaptability of mRNA technology. Thus, high-income countries must aid low-income countries through the United Nations and related organizations to facilitate investments, healthcare personnel training, and fair intellectual property rights agreements.

Introduction: The COVID-19 Pandemic

The wealthiest countries have been protected by safety bubbles from experiencing pandemics for almost a century. Robust systems of public goods provided by strong institutions such as healthcare, infrastructure, and funding for science have prevented much of the Western world and high-income countries from succumbing to rampant disease and economic ruin. However, these security bubbles were popped by the tip of a dangerous crown, the shape of which describes the Coronavirus. Its namesake derived from the Latin word for crown, Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), and its variants reached every corner of the globe. The COVID-19 pandemic exposed vulnerabilities of present-day political systems, infrastructure, and economies, with new strains taking hold in places with low health infrastructure and vaccine access, such as India (Kunal 2021). While wealthy countries with strong political and economic institutions utilized their stability and resources to address the issues of the pandemic, countries with histories of resource extraction and weak institutions experienced the impacts of healthcare and economic crises more severely. This fault is in colonial empires that established institutions in foreign nations for the purpose of exploitation and neocolonial practices. Resource extraction, including natural resources and labor, dispersed wealth among developed countries and left underdeveloped countries with weak institutions (Acemoglu 2008).

However, during the COVID-19 pandemic, the institutional unpreparedness of many countries transcended income levels and national borders. If developed countries improved their strategies in pandemic prevention, there are multiple approaches to

avoid another debilitating disaster. Therefore, this paper highlights vaccine effectiveness, developmental progress, and market failures as opportunities for growth in global disease prevention. This work describes lessons learned from addressing the COVID-19 pandemic, including the development of new vaccine technology, the manufacturing capabilities of companies, and the role of governmental agencies. Data-driven science and previous policy expansion have shown that the best courses of action to address global vaccine inequity are subsidizing the expansion of companies and technologies, allowing low-income countries to develop already existing patented vaccines, and international organizations facilitating growth in healthcare infrastructure.

Background

Vaccines

A vaccine is a biological product that elicits an immune response to specific antigens, providing protection against infection and/or disease on subsequent exposure to the pathogen. For viruses, these antigens are derived from the pathogen or produced synthetically to represent components of the pathogen. With the discovery of mRNA vaccine technology, antigens can be produced in humans by translation of the mRNA. Clinical trials measure the effectiveness of vaccines in preventing infection, reducing disease severity, and decreasing the rate of hospitalizations (Pollard 2021).

Vaccine Variations

There are multiple classifications of vaccines: live attenuated and non-live, as well as more novel categories such as nucleic acid-based RNA and DNA

vaccines. Live attenuated vaccines contain a weakened version of the pathogen that replicates enough to trigger an immune response in an immunocompetent host. However, this does not result in intense symptomatic disease manifestation unless the vaccinated individual has an immune deficiency. Some examples of live vaccines include measles, mumps, rubella, oral polio vaccine, and live attenuated influenza vaccine (Pollard 2021).

A non-live vaccine, sometimes referred to as *inactivated*, is more stable and less likely to replicate in an uncontrolled manner. Some examples of inactive vaccines include those for influenza, rabies, or poliovirus; however, it is important to consider that they are not effective for all pathogens and do not guarantee long-term immunity. In those cases, multiple doses and adjuvants are necessary (Rodrigues 2015). An adjuvant is used to stimulate the immune system further by introducing non-toxic foreign materials such as liposome-based adjuvants, oil-in-water emulsions, and aluminum salts (Pollard 2021).

New mRNA Vaccine Technology

There is a new hope for healthcare in the form of mRNA vaccine technology. Before the COVID-19 pandemic, there was minimal evidence that mRNA vaccines could be implemented in medicine. However, the successful use of this new technology for addressing the COVID-19 pandemic was undeniable. In the case of SARS-CoV-2, the major antigen detected by the immune system is a transmembrane protein within the capsid of the virus. Rapidly sequencing the RNA of the virus, researchers identified the mRNA responsible for coding the expression of the S protein of the capsid (Rijkers

2021). To produce mRNA vaccines, the S protein RNA from the virus is used to synthesize S protein DNA, which is inserted into a plasmid that acts as an expression vector. The plasmid that contains the gene is replicated to produce more DNA, while the gene is transcribed *in vitro* and the mRNA is modified for stabilization. The mRNA is purified and formulated in a lipid encapsulation, resulting in the mRNA vaccine. Once injected, mRNA enters a cell and is translated by the cell into the S protein antigen, triggering an immune response (Sartorius 2021). This technology created a new avenue for vaccine development, with mRNA vaccines progressing to clinical testing two months after a viral genetic sequence is identified. This faster timeline allows for a quicker turnaround for a new target virus (Pollard 2021). In the case of worldwide pandemics, it is of utmost importance that vaccines are rapidly developed to mitigate the spread and evolution of new strains of the disease. mRNA is a highly advantageous technology for safe and effective early eradication.

Effectiveness of Vaccines and Prevention of New Strains

Vaccines are most efficient in eradicating diseases when administered regularly and to a majority of the population. The possible effectiveness of widespread vaccination is undeniable, as evidenced in almost every case of widespread vaccination. Between the years 1912 and 2013, diphtheria, meningococcus, and polio were essentially eradicated in the UK, a few years after introducing the vaccine. High vaccination rates correlated with a severe drop in cases of these diseases in the UK population. However, *Haemophilus*

influenzae type B re-emerged when there was a reduction in vaccinations for that disease (Pollard 2021).

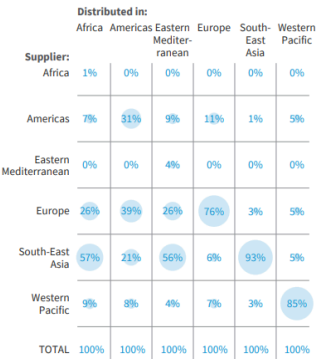
New strains evolve through mutation in circumstances where immunity is not developed. For example, the COVID-19 pandemic was undoubtedly characterized by the looming uncertainty of where and when the next strain would develop. It was unknown how likely the next strain was to infect and cause permanent suffering or death to those who contracted it. However, herd immunity reduces the development and spread of new strains during a pandemic when susceptible populations avoid exposure through indirect vaccine protection. Individuals who recover from a previous infection or are prevented from infection by the vaccine interrupt the transmission of the disease to unvaccinated individuals (Pollard 2021). Therefore, the more rapidly herd immunity is achieved, the fewer new strains will occur. Herd immunity works not only in small communities but across the globe because networks of transportation and infrastructure connect every continent and territory. Herd immunity can be achieved rapidly through worldwide vaccinations to help prevent global infection and mutations.

Gaps in Manufacturing and Market Failures

The World Health Organization (WHO) categorizes geopolitical regions to maintain statistical evidence of populations and their health. In the WHO African and Eastern Mediterranean Regions, COVID-19 vaccines were sourced from outside their regions. As seen in Figure 1, African countries produce no vaccines, Eastern Mediterranean countries produce close to none (6%), and both rely on other regions for their manufacturing needs. Not only does this make the

African and Eastern Mediterranean regions vulnerable to trade wars and market failures, but it exemplifies the need for diversity in manufacturing. In Figure 1, the *With COVID-19* table shows a greater balance in the percentages of distribution per region from the *Without COVID-19* table, indicating that suppliers created a more even distribution. Essentially, regions got their supply from a wider variety of distributors; therefore, they were less reliant on one specific area for their vaccines. For example, before the COVID-19 pandemic, 31% of American vaccines were distributed within the region, but 11% or under were distributed to other regions. However, during COVID-19, 57% of America's vaccines, 56% of Europe's, 26% of the Eastern Mediterranean's, and 17% of Africa's were received from America. While there was modest improvement in the distribution of vaccines during COVID-19, regions tend to supply to themselves due to transportation costs and the ease of pre-existing trade policies, also known as path dependency.

Without COVID-19



With COVID-19

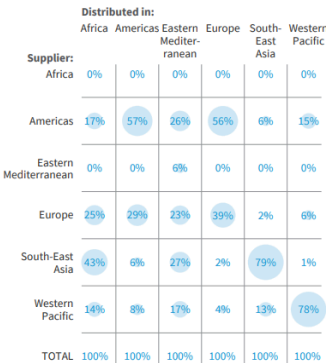


Figure 1- Regional Vaccine Volume Distribution Versus Supply (WHO 2023)

In Africa, the Eastern Mediterranean, and the Western Pacific, untapped markets potentially lower production costs and incentivize facility expansion. The WHO reports that, while there are 90 manufacturers supplying vaccines to WHO member states, fewer than 10 use their technology to reach global needs. This structure is insufficient to meet the demand of a pandemic, as was seen during COVID-19. As described

in the report, the international public health emergency in 2020 highlighted the need for global vaccine access as a public good (WHO 2023). A public good is a good that everyone can access and benefit from, and this is the case when addressing vaccines that stop the spread of deadly contagions.

The WHO also asserts that public pressure is needed to urge governments within international institutions to use their collective resources when investing in global immunization (WHO 2023). Low-income countries cannot be ignored in the case of pandemics, when all countries are vulnerable to diseases originating from across the globe. As seen in Figure 2, there was some improvement in access to vaccines that occurred during the COVID-19 pandemic, but the contrast in vaccine doses is significant when compared to typical vaccination rates. The proportion of non-COVID-19 vaccine doses in low-income countries is less than 1/7 of high-income countries. The ratio of low-income improved to 1/3 that of high-income countries during COVID-19. This shows that there is a need for improvement, and under pandemic conditions, significant progress was made. Therefore, this system should serve as a model in preparation for future pandemics.

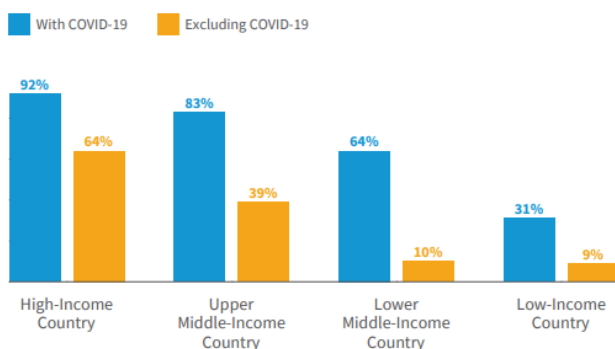


Figure 2 - Percentage of doses of vaccines used in each income country that are classified as Adult, 2021 (WHO 2023)

Progress and Solutions

Recent Vaccine Manufacturing Expansion into Africa

Global pharmaceutical brands have begun to enter new markets under public pressure to expand manufacturing and accessibility. For example, Moderna announced that it is investing up to \$500 million to establish fill, finish, and packaging drug manufacturing facilities in Kenya. This project is expected to build mRNA capabilities in Africa for about 500 million doses a year to supply the region (Moderna 2022). Likewise, BioNTech (Pfizer) is constructing BioNTechainers, modular manufacturing facilities for mRNA vaccine production. Initially staffed by BioNTech, the Rwandan facility will manufacture vaccines on a not-for-profit basis in Africa and move to train and hire local workers. Furthermore, these facilities will use mRNA technology to develop vaccines for diseases that affect the region more locally, such as malaria and tuberculosis (Merelli

2022). While the COVID-19 pandemic is the main example of why vaccine equity is important, it is just as crucial that attention is given to the diseases that underdeveloped and low-income countries face. mRNA technology offers new hope in this realm of research that might amount to significant changes in living conditions and quality of life worldwide.

Recent Vaccine Manufacturing Expansion into South America

Significant expansion in Brazil exemplifies the target of middle-income country vaccine production, as they possess a solid foundation for the necessary infrastructure, technology, and personnel to facilitate such manufacturing. Instituto Butantan and Bio-Manguinhos/Fiocruz are two major vaccine producers that work with foreign companies; the former with the Chinese pharmaceutical company Sinovac, and the latter with AstraZeneca (AZ) (Zeng 2022). Licensing agreements such as in the case of AZ are highly successful, leading to domestic independent ownership.

AZ is highly experienced in technology transfer through a broad global manufacturing network working with Bio-Manguinhos (BioM), a public laboratory linked to Brazil's Ministry of Health (MoH). About 50% of the COVID-19 vaccines administered in Brazil came from the AZ-BioM partnership as of 2021 (Fonseca 2023). BioM used pre-existing facilities to expand according to AZ guidelines in two stages. BioM would complete the fill-finish process, and during the second stage, build the capacity to produce the drug substance locally. Since then, Brazil has established the Department of Bio-Products for Vaccines and Biosimilars, as well as "Encomenda tecnológica (Portuguese acronym ETEC),

which is part of the 2004 Innovation Law and the 2016 Science, Technology and Innovation Code” (Fonseca 2023). Preemptive solutions from established institutions combating vaccine inequality show promising outcomes. Regional deficiencies are progressively addressed through investments in both South American and African manufacturing.

Avenues of Funding

The previously mentioned expansion would not be possible without heavy government involvement. For instance, Moderna received nearly \$2.5 billion to develop, manufacture, and sell its vaccine to the federal government of the United States, and establish a highly successful partnership with the National Institutes of Health. In contrast, Pfizer’s chief executive, Dr. Albert Bourla, chose not to receive federal funding, along with its research partner, the German firm BioNTech. Their research and development of the COVID-19 vaccine was fully funded by Pfizer, demonstrating that large pharmaceutical companies can respond quickly in a pandemic (LaFraniere 2020). Thus, the efforts of governments and the pharmaceutical industry are both required for success. The primary means of avoiding barriers to entry in vaccine development is investment from wealthy institutions. For high-income countries, this means government subsidies from direct political involvement and participation by large pharmaceutical companies.

In addition, charitable foundations can be utilized to gain financial support. The Bill and Melinda Gates Foundation committed \$3.9 billion to the GAVI Alliance, an organization dedicated to global vaccine equity, throughout 1999, 2016, and 2021, with an

average spending lifespan of 60 months per donation. In addition, the Gates Foundation committed \$311,630,758 in 2016 to the World Health Organization to be used over 127 months following the donation (gatesfoundation.org). The Gavi Alliance launched the African Vaccine Manufacturing Accelerator (AVMA) in 2024 to finance US\$ 1.2 billion for the sustainable development of vaccine manufacturing. This was done in partnership with the African Union and the Africa Centres for Disease Control and Prevention (Africa CDC) (gavi.org). Wealthy charities offer substantial funds that can be facilitated through dependable international institutions. Through diplomacy and public involvement, the redistribution of resources can be carried out efficiently and systematically.

Where to Focus Aid

A reasonable indication of the need for healthcare infrastructure is the recorded number of healthcare workers per population. According to Table 1, high-income countries average over 2.3 times the number of healthcare workers per population of 1,000 people than middle-income countries, and more than 10 times that of low-income countries (World Bank 2024). As such, countries that fall under low-income categories deserve and need better access to financial aid to train healthcare workers. This is a requirement if we are to respond to future pandemics more effectively.

Table 1. Income Levels and Healthcare workers per 1,000 people (2018)			
Income	Healthcare workers/1k	Example	Healthcare workers/1k

	People		People
High Income	3.2	European Union	3.9
Middle Income	1.4	Iran, Islamic Republic	1.6
Low Income	0.3	Haiti	0.2

Table 1- Income Levels and Healthcare workers per 1,000 people (2018) (World Bank 2024)

Low- and middle-income countries are in the most need of assistance in addressing public health concerns. Low healthcare workers per capita is just one indication of the dire situation that some countries experience. Moving forward, addressing global health will mean analyzing data to target regions and working with states that need aid in improving vaccination rates.

United Nations Organizations and Patents

Vaccine equity is likely impossible through industry expansion and charitable organizations alone. The United Nations (UN) is an intergovernmental organization established to maintain international peace and security, which includes global public health. Representatives from multiple countries meet to establish agreements to benefit its members, some of which include monetary goals to contribute to tackling issues that would be impossible to solve using one country's resources. The leading UN agency that addresses global pandemic preparedness is the WHO,

capable of training healthcare workers, advising governments, and collecting data on disease spread and control. WHO and its partners launched the COVID-19 Technology Access Poll (C-TAP) in May 2020 for the developers of COVID-19 therapeutics, diagnostics, vaccines, and other health products. This platform makes their IP available as public resources (Zeng 2022). WHO's World Health Assembly recently adopted a resolution on "Strengthening local production of medicines and other health technologies to improve access," which identifies several actions to foster the technological development of and equitable access to life-saving biomedical products (World Health Organization, 2021a) (Fonseca 2023).

WHO also creates initiatives for governments to follow such as Preparedness and Resilience for Emerging Threats (PRET) for further equity to supplement vaccine access (who.int 2023). PRET uses the mode of transmission through which a pathogen spreads to categorize and create guidelines for governments to follow. The templates are highly researched with universal contributions from WHO experts and constructed for pandemic prevention. Thus, they recommend the following actions: 1. Update preparedness plans that affirm priority actions and that have considered learnings from past events. 2. Increase connectivity among stakeholders in pandemic preparedness planning through systematic coordination and cooperation. 3. Dedicate sustained investments, financing, and monitoring of pandemic preparedness with a particular focus on addressing the gaps identified during past pandemics and epidemics (who.int 2023).

Another agency of the UN is the World Trade Organization (WTO), functioning similarly to the WHO,

through agreements that create international trade law. Through taxation and subsidies, the WTO is the only group related to the UN with enforcement power. One of these agreements is the Trade-Related Aspects of Intellectual Property Rights (TRIPs), in which member states of the WTO are subject to IP rights of other countries through individual governments signing these rules into law. Twenty years of patent protection are awarded for a new vaccine, but can be waived using Public Health Crisis mechanisms, such as compulsory licensing and parallel imports. Essentially, once a firm has exhausted all options to attain a license for a medical product, licenses are granted involuntarily by the patent holder's government to allow the licensee to produce and sell the product domestically (Subhan 2006).

Conclusion

With modern advances in technology, such as mRNA vaccines, laboratory expansion, and the upward trend of global diplomatic cooperation, modern society has the capabilities to create vaccine equity across the world. The spread of the SARS-CoV-2 virus led to a worldwide pandemic, resulting in millions of deaths and economic hardship, as well as many lessons learned. Improvements in worldwide health infrastructure will help prevent future tragedies and financial dissolution resulting from pandemics. The data from the COVID-19 pandemic shows that inequalities in the world no longer affect just the less fortunate, but also those with privilege and more reliable institutions. The next pandemic might be even worse than COVID-19 if wealthy nations and the UN do not invest in universal pandemic preparedness.

Partnerships and subsidies are essential prior to a pandemic because creating infrastructure and training requires time and funding. Preemptively establishing the global avenues through which to adapt to diseases and other health issues will lessen the burden on existing structures, especially when travel restrictions limit the transportation of personnel for training and logistics when experiencing a pandemic. To ensure that vaccines are available for current and future epidemics, both parties (pharmaceutical companies and governments) require long-standing goals of innovation and expansion. This approach was clearly established between Brazil and AZ. Many low- and middle-income countries seek to be independent producers of vaccines but are unable to overcome obstacles such as underfunding and developing industries. Pathways of integration, as exemplified by BioNTech (Pfizer) and Moderna in Africa through phases of technology transfer and training, will lead to the regional distribution of vaccines. Global vaccine equity will help prevent pandemics from occurring in the future. The interconnected world that we live in today cannot afford mass isolation, so a globalized problem requires a globalized solution. We have the technology to build and protect most of the world's people from such a catastrophe; now all we need is cooperation and understanding to propel it forward.

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Barreras Idiomáticas: Los Sesgos Inconscientes de la Criminalidad de los Hispanohablantes/

Language Barriers: The Unconscious Bias of Spanish-Speakers' Criminality

Bella Landino

Abstracto

Los nuevos cambios en las políticas y leyes en los Estados Unidos (EE.UU.) han influido en la relación entre los cuerpos policiales y los grupos lingüísticos minoritarios. El 1 de marzo de 2025, el inglés fue declarado el idioma oficial de los EE.UU. que causó una relación tensa entre los hablantes de lenguas minoritarias, como los hispanohablantes, y los cuerpos policiales. La literatura presente enfatiza que la creación de estereotipos sobre los latinos, los medios de comunicación, y sistemas de poder son las causas de sesgos inconscientes. Por lo tanto, las barreras idiomáticas se perpetúan por el sesgo inconsciente que las policías tienen sobre la criminalidad de los hispanohablantes. El propósito de esta investigación fue evaluarlos tipos de estereotípicos y prejuicios que las policías tienen sobre la criminalidad de los hispanohablantes y cómo el acento influye en sus interacciones. Específicamente, se seleccionó a miembros de la Academia de Policía de Westchester y fueron dadas un cuestionario. Los participantes fueron

asignados a escuchar una grabación de audio de un hablante de inglés con o sin acento típicamente español. Fueron preguntados una serie de preguntas sobre su percepción de la criminalidad, el empleo, la educación, el estatus legal y las características del hablante, y se les pidió que asignaran una de dos fotos faciales al hablante; una era típicamente hispana y la otra típicamente blanca. Los resultados de este estudio no encontraron muchas diferencias entre los dos grupos de hablantes, aparte de su estatus legal. En este caso, el hablante con acento español fue percibido con mayor frecuencia como ciudadano no estadounidense que el hablante sin acento. Debido a la variedad de resultados, este trabajo señala la necesidad de continuar investigando la relación entre los cuerpos policiales y los hispanohablantes. Las políticas de inmigración y lingüísticas perpetúan los problemas de las barreras idiomáticas y necesitan ser reexaminadas para crear un sistema policial libre de prejuicios.

Abstract

New policy changes and laws in the U.S. have influenced the relationship between law enforcement and minority language groups. On March 1st, 2025, English was declared the official language of the U.S, which caused a tense relationship between minority language speakers, such as Spanish-speakers, and law enforcement. Current literature emphasizes that the creation of Latino stereotypes, the media, and systems of power are the causes of unconscious biases. Thus, language barriers are perpetuated by the unconscious bias that police officers have towards Spanish-speakers' criminality. The purpose of this research was to assess the types of stereotypes and prejudices that police

officers have towards the criminality of Spanish-speakers, and how accent plays a role in their interactions. Specifically, members of the Westchester Police Academy were sampled and given a questionnaire. Participants were assigned to listen to an audio recording of an English speaker either with or without a stereotypically Spanish accent. They were asked a series of questions about what they view as the speakers' criminality, employment, education, legal status, characteristics, and asked to assign one of two facial photos to the speaker; one of which was stereotypically Hispanic, and the other stereotypically white. The results of this study found not many differences between the two groups of speakers, aside from legal status. In this case, the speaker with a Spanish accent was more often viewed as a non-U.S. citizen than the speaker without an accent. Because of the variety of findings, this paper points to the need to continue investigating the relationship between law enforcement and Spanish-speakers. Current immigration and language policies perpetuate issues of language barriers and need to be reexamined to create a police system free from biases.

Durante los últimos años, los prejuicios dentro de las fuerzas policiales han sido un tema de creciente preocupación, pero ¿qué pasa cuando esos prejuicios se basan en algo tan fundamental como el idioma? En particular, como hispanos o latinos hablan en inglés con un acento o solo en español. La barrera del idioma entre la policía y los hispanohablantes puede crear problemas sobre los sesgos inconscientes y estereotipos de los hispanohablantes. En particular, hay estereotipos de la educación, la competencia, el estatus legal, y la criminalidad de los hispanohablantes. El problema de algunas investigaciones es que no usan a la policía actual para entender sus ideas de los sesgos inconscientes de la criminalidad de los hispanohablantes. Para esta investigación, vamos a preguntar si la policía actual tiene prejuicios y estereotipos que contribuyen a los sesgos inconscientes sobre la criminalidad de los hispanohablantes. Además, si hay una diferencia entre el tratamiento policial de un hispanohablante o un anglohablante. Esta investigación va a usar miembros de la policía de Westchester, New York y examinar cómo ellos crean sesgos. La hipótesis es que es probable que la policía etiquete a los hispanohablantes como criminales, en lugar de a los anglohablantes por sus sesgos inconscientes. Con los cambios recientes en la política de inmigración, los prejuicios policiales pueden afectar las interacciones y relaciones con los hispanohablantes en su comunidad.

La creación del “bandido”

Los estereotipos de los latinos no son nuevas concepciones de la policía porque está presente en formas de medios, políticos, y racialización. Cuando hablamos de estereotipos, hablamos de la idea

demasiado simplificada de un grupo de personas que puede resultar en un perjuicio para su imagen y su tratamiento. Los estereotipos y sus prejuicios crean lo que se llama racialización, o dar un carácter racial a alguien o algo. Este concepto puede categorizar a grupos de personas y marginarlos para convertirlos en minorías étnicas y raciales en una sociedad angla. Más similar, Brown y otros describen que “Race and stratification scholars generally concur that racialization involves the mutually constitutive processes of ascription and identification” (120). En otras palabras, la racialización ocurre cuando hay dos componentes de adscripción e identificación. La adscripción es el proceso de atribuir algo a una causa, mientras que la identificación es relacionar a alguien o algo con otro basándose en el reconocimiento. La esencia de su argumento es que la racialización puede ocurrir debido a que se atribuye la causa de algo a la identidad de una persona. Por ejemplo, si hay una noticia sobre un latino robando una tienda, la causa por lo que robó una tienda se atribuye automáticamente a su identidad latina, no a la razón por lo que perdió su trabajo y necesitaba alimentar a su familia. La racialización de un grupo en particular puede crear estereotipos específicos, como en este ejemplo que los latinos son criminales, pobres y vagos. Muchos críticos de racialización como Brown describen que los estereotipos de los latinos son vastos y causados por la media y políticos también.

Hay muchos efectos negativos de los estereotipos de los latinos, especialmente características que son muy generalizadas. Para latinos e inmigrantes, hay más estereotipos negativos que positivos. Los medios de comunicación podrían darnos estos estereotipos que se imponen en los prejuicios

inconscientes de las personas. Por ejemplo, en el estudio realizado por Reny y Manzano, recopilaron datos de encuestas sobre este tipo de estereotipos. Por lo tanto, al ver el número de personas que ven a los latinos en roles estereotipados, las clasificaciones más altas atribuyeron a los latinos como delincuentes, jardineros, sirvientas y policías (Reny & Manzano 199). Aunque el estereotipo de los latinos como agentes de policía es generalmente positivo, hay 71% de las personas en su estudio que creen que los latinos son criminales. Mientras tanto, el porcentaje más bajo de roles de los latinos eran personajes que no terminaban la escuela, médicos, profesores y jueces (Reny & Manzano 199). En pocas palabras, demuestra que los latinos tienen roles negativos que disminuyen su riqueza e inteligencia. Debido a la forma en que los medios retratan a los latinos, las personas sin experiencia con este grupo de personas comenzarán a creer estos estereotipos y agruparán a los latinos como un “otro” que no es parte de su grupo. Otra estadística importante encontrada en su estudio es que casi la mitad de los participantes estuvo de acuerdo con la afirmación de que los latinos no quieren aprender inglés (Reny & Manzano 199). En otras palabras, existe otro estereotipo para los latinos de que solo hablan español y no tienen la inteligencia para aprender inglés en los EE.UU. Para muchos hispanohablantes, existen dificultades para encontrar recursos para aprender inglés. Además, existe una presión y expectativa adicional para que aprendan inglés para poder sobrevivir y prosperar en los EE.UU. Aunque esto no es cierto, la sociedad angla hace que tengan dificultades con el inglés y dificultades para vivir sin estereotipos.

Aunque se discuten muchos estereotipos diferentes, el que se aplica específicamente a la criminalidad latina es el “bandido”. El bandido es retratado hoy como el criminal latino, miembro de una pandilla y miembro violento de la comunidad. Específicamente en los medios, Ramírez-Berg ha teorizado sobre los seis estereotipos básicos de los latinos, incluido el bandido. Como lo describe Ramírez-Berg, el bandido “ruthlessly pursues his vulgar cravings- for money, power, and sexual pleasure- and routinely employs vicious and illegal means to obtain them” y “His inability to speak English or his speaking English with a heavy Spanish accent is Hollywood’s way of signaling his feeble intellect” (68). La esencia de su argumento es que el bandido hará cualquier cosa por su beneficio egoísta, incluso cometer delitos violentos. Además, él tiene un acento que muestra a la audiencia que él no es inteligente. La función de este estereotipo es crear un personaje latino que es el culpable del crimen. En lugar de examinar los muchos factores que causan la delincuencia, se espera que un latino cometa delitos basándose en su raza y falta de inteligencia, como lo indica su falta de inglés. La narrativa de los latinos y los hispanohablantes como criminales no es nueva y no solo está presente en los medios y la política. Para comprender mejor este estereotipo en la política, podemos mirar la campaña “Make America Great Again” de 2016 y cómo se ha retratado a los latinos desde entonces. Específicamente para los latinos en los EE.UU., el bandido se repite en la idea que Donald Trump tiene de los latinos. En particular, en el artículo de González, habla de los latinos en los medios durante la campaña MAGA. Él escribe que “Latinos in the U.S. are largely understood through narratives of migration,

illegality, and criminality” (Gonzales 51). En otras palabras, los latinos solo son vistos como una minoría, y solo por sus estereotipos negativos. El bandido se extiende desde las dimensiones de los medios y la política, y continúa afectando la forma en que se ve a los latinos. Con el uso continuo de estereotipos, las creencias negativas sobre la criminalidad de los latinos van a aumentar y perpetuarse.

La relación entre la policía y los hispanohablantes

Como se mencionó, la creación del estereotipo de bandido se ha abierto camino en sistemas de poder, como la policía. Cuando hablamos de la dinámica entre los latinos y la policía, debemos reconocer la dinámica de poder. Ya existe un desequilibrio de poder entre la policía y los civiles, pero la raza y etnia es un factor adicional a la dinámica. Para los latinos, son estereotipados como criminales poco inteligentes, lo que los convierte en un “otro” que no está dentro de su poderoso grupo social y racial. March y Graham hablan de esto más específicamente en su artículo sobre los sesgos intergrupales y exgrupales (1). En su estudio, presentaron a los grupos imágenes de rostros estereotípicamente hispanos y rostros estereotípicamente blancos. Luego se pidió a los participantes que indicaron atributos positivos o negativos de esta persona (March & Graham 5). Aunque sus resultados no fueron completamente significativos, hubo un poco más estereotipos negativos para los rostros hispanos que para los blancos (March & Graham 7). Estudios como este pueden demostrar cómo se forman grupos en función de la raza y el poder entre ellos. El desequilibrio de poder adicional entre la raza y la policía es algo importante que

hay que entender cuando se habla de sesgos inconscientes entre la policía.

Los hispanohablantes son estereotipados en los medios y tienen prejuicios que influyen en los perfiles criminales hoy. Los estereotipos y prejuicios no solo afectan a los latinos como un grupo étnico, sino también como un grupo lingüístico. Debido a que muchos latinos, especialmente inmigrantes, hablan español como una lengua dominante, existe un aspecto adicional a perfilando, conocido como sus perfiles lingüísticos. El perfil lingüístico es similar al perfil racial por la policía. Sin embargo, la diferencia entre los dos es que el perfil lingüístico es auditivo, mientras que el perfil racial es visual. Por lo tanto, en el perfil lingüístico, los latinos están sesgados según su español y su forma de hablar inglés. Se aplican los mismos estereotipos, pero de una manera diferente- se basa en el idioma- que indica la etnia. Además, algunos latinos pueden parecer blancos, pero hablan con un acento, lo que indica su origen étnico. Como lo describe Zentella, “In the United States, the Spanishes of Latinas/os continue to be exploited as tool of linguistic oppression, as are our Englishes” (622). En otras palabras, tanto el español que hablan los latinos como su inglés pueden ser utilizados como forma de discriminación y prejuicio. También plantea cómo ser bilingüe en los EE.UU. puede afectar a los latinos como un grupo de personas en términos de su criminalidad. Hablar bilingüe no solo afecta a los hispanohablantes, sino que también perpetúa los estereotipos negativos sobre los latinos.

La combinación de perfiles raciales y lingüísticos es un gran problema entre la policía. En particular, los estudios demuestran cómo los latinos en los EE.UU. desconfían de la policía, ya que son atacados

o decepcionados muchas veces. Debido a que el español es un indicador de origen étnico, también puede ser un indicador de estatus migratorio. Otro de los muchos estereotipos negativos sobre los latinos es que todos están en los EE.UU. ilegalmente. Esto perpetúa la desconfianza entre la policía y los civiles latinos debido a sus diferencias lingüísticas. Además, muchos latinos se sienten decepcionados por la policía. Se ha descubierto que muchos agentes de policía ignoran las llamadas de las latinas y usan fuerza excesiva con los latinos. Esto se debe tanto al idioma que hablan como a su origen étnico. Weitzer analiza este fenómeno cuando afirma, “In a Chicago study, Spanish-speaking Hispanics were more likely than English-speaking Hispanics (as well as blacks) to believe that excessive force was a big problem in their neighbourhood and were twice as likely to think that Chicago police officers were corrupt (Skogan 2006)” (2002). En pocas palabras, en los barrios de Chicago, la fuerza excesiva hacia los hispanohablantes es un gran problema dentro del sistema policial. Aunque tanto la raza como el idioma desempeñan un papel en este tipo de discriminación, las barreras del idioma llevaron los desequilibrios de poder más para la policía. Este tipo de relación entre los hispanohablantes y la policía no es infrecuente e impacta muchas comunidades. El problema es descubrir dónde ocurre esta discriminación y qué están haciendo los sistemas policiales actuales para tratar de resolver su corrupción y sus prejuicios. Por esta razón, realicé un estudio para comprender la dinámica de los prejuicios de la policía hacia los hispanohablantes en NY.

Metodología

Participantes

14 participantes fueron preguntados para participar en una encuesta de selección aleatoria. Todos los participantes eran empleados del Departamento Correccional del condado de Westchester, New York o oficiales de policía en período de prueba en la Academia de Policía de Westchester. El condado de Westchester es un área muy diversa con muchas personas hispanas en ciudades como Mount Vernon, Yonkers, y New Rochelle. Entonces, los participantes fueron 28.6% afroamericano, 28.6% hispano, 28.6% blanco, y el resto fue nativo americano, asiático, o medio oriente. También, los participantes tenían entre 21 y 39 años para capturar a los policías del futuro en Westchester, pero solo se identificaron como hombres. Finalmente, 42.9% de los participantes hablan otro idioma, además del inglés, y 66.7% de ese 42.9% hablan español.

Materiales

Este estudio usó materiales nuevos y existentes en otros estudios de sesgos inconscientes de hispanos. Primero, creé un audio generado usando el sitio web, “Listnr” (“AI Voice Generator, Text-to-Speech”). Este sitio web puede crear acentos diferentes con inteligencia artificial como los dos audios de mi estudio (“Listnr”). También, usó dos imágenes de una persona blanca y una persona hispana del estudio previo de March y Graham (5). El resto de la encuesta tuvo nuevas preguntas sobre las opiniones de los participantes y su interacción posible con estas personas de imitaciones. Este incluyó preguntas como adjetivos para describir esta persona, la profesión de la persona, el nivel de educación, y afirmaciones sobre su criminalidad. Todas las preguntas

fueron usadas para comprender los sesgos de los participantes y la policía en general.

Procedimiento

Una muestra de conveniencia estaba hecha y la encuesta fue realizada a participantes que son empleados del Departamento Correccional del condado de Westchester y oficiales de policía en período de prueba en la Academia de Policía de Westchester. A los participantes se les dijo que la encuesta fue para comprender las interacciones y conversaciones entre la policía y otras culturas en New York. Primero, ellos eligieron un color que les asignará aleatoriamente a una de las dos condiciones: un audio de una persona blanca y un audio de una persona hispana. Después, había una sección de cómo describe esta persona: educado o no inculto, fiable o poco fiable, simpático o antipático y selección de los adjetivos de esta persona. También tiene dos preguntas de profesión y educación como cuál cree que es su profesión y nivel de educación. Finalmente, la única pregunta abierta fue “¿Cómo te sientes al interactuar con esta persona?” La próxima sección fue sobre la criminalidad de estas personas como “¿Qué posibilidades crees que hay de que esta persona cometa un crimen?”, y afirmaciones como “Esta persona es un criminal,” “Esta persona es un pandillero,” y “Esta persona no es ciudadana estadounidense.” Se les pidió que relacionarán la voz en el audio con el rostro que pensaban que era. Las dos opciones para los rostros eran del estudio de March y Graham (5), que incluía un rostro estereotipadamente blanco e hispano. Finalmente, había preguntas demográficas sobre edad, género, y si hablaba otro idioma. Todas las preguntas de la encuesta se pueden encontrar en el apéndice.

Resultados

El propósito de esta encuesta fue comprender los posibles sesgos y estereotipos que los futuros policías tienen hacia los hispanohablantes. Los resultados del estudio son muy sorprendentes cuando comparamos con la literatura sobre los sesgos inconscientes de la policía. De las muchas preguntas formuladas, discutiremos cinco descubrimientos claves: nivel educativo, empleo, posibilidad de delincuencia, sesgos de criminalidad, y sesgos visuales.

El primer tema es los estereotipos en el nivel educativo de los hispanohablantes versus los anglohablantes. La pregunta que se hizo a los participantes fue “¿Cuál crees que es el nivel educativo de esta persona?”. Para quienes recibieron el audio con acento español, la mayoría informó que pensaba que esta persona tenía un nivel educativo de grado 12 o menos. Mientras tanto, de quienes recibieron el audio sin acento, la mayoría informó que creía que esta persona tenía un nivel educativo de licenciatura. La Figura 1 es un gráfico circular que muestra todos los niveles de educación reportados para los hispanohablantes. Como se muestra, hubo una gran proporción de participantes que pensaban que esta persona tenía un nivel educativo bajo (grado 12 o menos, o graduado de escuela secundaria o equivalente). Además, la Figura 2 muestra todos los niveles de educación informados para los anglohablantes. Este gráfico puede demostrar cómo la mayoría de los participantes creía que esta persona tenía algún título, en su mayoría con licenciatura.

Figura 1: Educación del hispanohablante

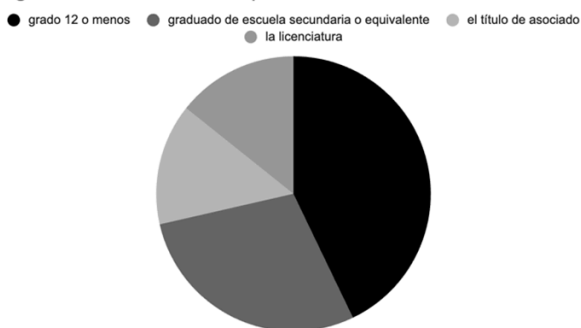


Figura 1: El nivel educativo que los participantes que recibieron el audio con acento español creían que tenía el hablante.

Figura 2: Educación del anglohablante

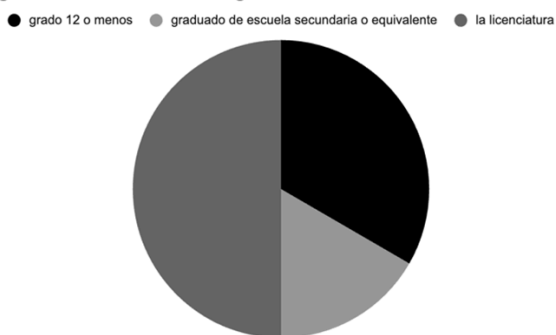


Figura 2: El nivel educativo que los participantes que recibieron el audio sin acento español creían que tenía el hablante.

El segundo tema es los estereotipos de empleo al comparar a los hispanohablantes con los anglohablantes. Cuando se le preguntó, “¿Qué profesión crees que tiene

esta persona?”, hubo más variedad en las respuestas para los hispanohablantes. Sin embargo, los participantes en el grupo del acento español informaron que esta persona es un constructor. Pero, los participantes en el grupo sin acento informaron que esta persona es un policía. La Figura 3 es un gráfico circular de los numerosos trabajos reportados para los hispanohablantes: constructor, oficial de policía, enfermero/médico, cocinero y profesor. También, la figura 4 es los trabajos reportados para los anglohablantes: profesor, policía y jardinero. Aunque hubo más diversidad en las respuestas para los hispanohablantes, la mayoría de los trabajos ofrecidos eran estereotipados.

Figura 3: Trabajos del hispanohablante

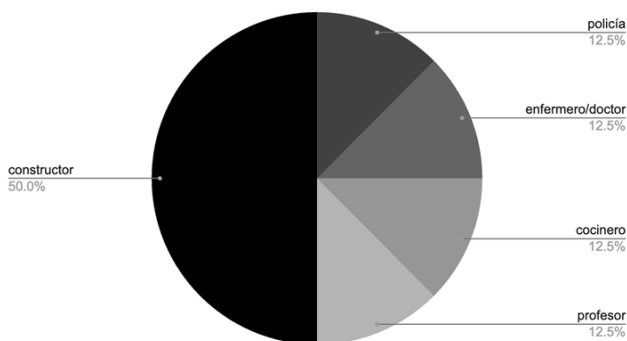


Figura 3: La ocupación que los participantes que recibieron el audio con acento español creían que tenía el hablante.

Figura 4: Trabajos del anglohablante

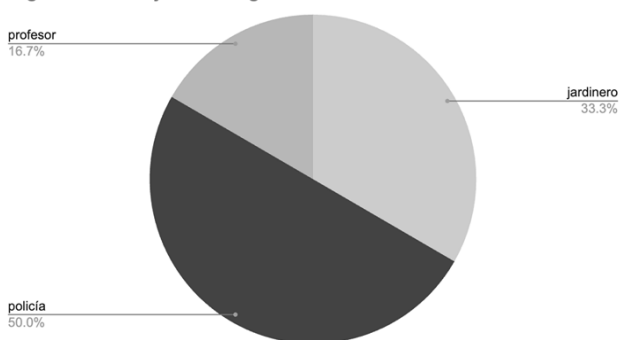


Figura 4: La ocupación que los participantes que recibieron el audio sin acento español creían que tenía el hablante.

El tercer tema encontrado es la posibilidad de delito para el hablante. Para esta pregunta, se preguntó a los participantes: “¿Qué probabilidades crees que hay de que esta persona cometa un crimen?” Se les asignó una escala del 1 al 5 (1=no es probable, 5=muy probable). Cuando miramos a los dos grupos diferentes, hay mucha similitud en sus respuestas. La Figura 5 ilustra el número de personas que seleccionaron cada nivel de probabilidad de que esta persona pueda cometer un crimen. El grupo del acento español promedió aproximadamente 1.88, mientras que el grupo sin acento promedió aproximadamente 1.84. En general, estos son promedios muy cercanos y no proporcionan ningún resultado significativo.

Figura 5: ¿Qué posibilidades crees que hay de que esta persona cometa un crimen?

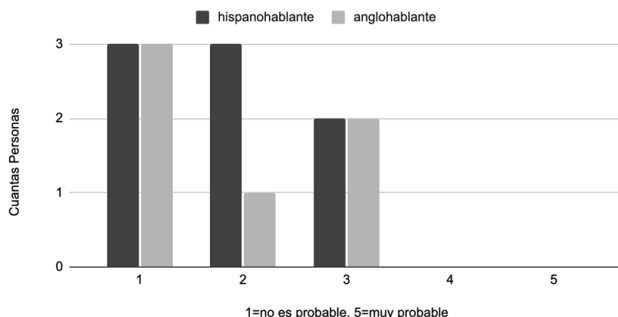


Figura 5: La probabilidad hay de que los participantes de ambos grupos creen que el hablante va a cometer un crimen.

El cuarto tema es los prejuicios en la criminalidad, que tenía muchas dimensiones. La pregunta general formulada a los participantes fue “¿Qué tan de acuerdo está con las siguientes afirmaciones?” Una vez que leyeron la afirmación, se les pidió en una escala del 1 al 5 cuánto estaban de acuerdo (1= no estoy de acuerdo, 5=estoy de acuerdo). Como se muestra en la figura 6, se pidió a los participantes que respondieron a 3 afirmaciones. El primero fue “Esta persona es un criminal”. Al comparar los dos grupos, esta afirmación promedió aproximadamente lo mismo y no mostró ningún resultado significativo. La segunda afirmación fue “Esta persona es pandillero”. Una vez más, las medias fueron muy similares y no se pudieron distinguir diferencias entre ambos grupos de hablantes. Sin embargo, la tercera afirmación fue “Esta persona no es ciudadana estadounidense” y ahí es donde vimos una gran diferencia. Para los participantes que escucharon el

audio del hispanohablante, reportaron un mayor acuerdo en que esta persona no es ciudadana de los EE.UU. que el anglohablante. En general, estos resultados fueron más drásticos entre los dos grupos.

Figura 6: ¿Qué tan de acuerdo estás con las siguientes afirmaciones?

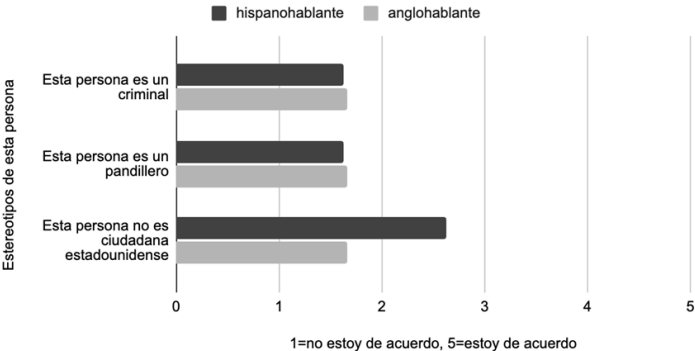


Figura 6: Cuánto están de acuerdo los participantes de cada grupo con las afirmaciones.

El último tema que es importante para discutir es los sesgos visuales. La última pregunta de la encuesta pidió a los participantes que relacionarán la voz de la persona con su rostro y se les dieron dos opciones. Estas fotografías fueron las seleccionadas del estudio de March y Graham (5): un rostro estereotípicamente blanco e hispano. Sorprendentemente, entre los dos grupos no hubo diferencias en quién seleccionaron; ambos grupos eligieron la cara estereotipadamente blanca. Aunque la intención era ver si tenían sesgos en lo visual y lo audio recibido, parecía que se había ignorado el estímulo visual.

Discusión

Según los resultados mostrados, la hipótesis no fue totalmente apoyada. Además, se encontraron resultados bastante sorprendentes que requieren más investigación. Según este estudio, aunque parece que hay algunos sesgos hacia los hispanohablantes, el sesgo no se refiere necesariamente a la criminalidad.

Aunque se supone que estos participantes representan el futuro de la policía en Nueva York, este fenómeno en los datos puede explicarse por la demografía. Por ejemplo, una gran mayoría de estos participantes eran de diversas ciudades del condado de Westchester, como Mount Vernon. Esta ciudad en particular es la más diversa del condado de Westchester, lo que puede exponer mejor a la futura policía a comunidades diversas de personas. La gran población hispana aquí se suma a la idea de que estos participantes están más familiarizados con los acentos y tienen menos sesgos de criminalidad.

Otro aspecto de los datos son los estereotipos que se identificaron. Por ejemplo, en términos de ocupación y educación, hubo un gran consenso en cuanto a que los hispanohablantes asumieron trabajos de bajos ingresos y de uso intensivo de mano de obra que requieren poca o ninguna educación. Esto refleja cuántos creen que los hispanohablantes son poco inteligentes y solo ocupan trabajos de clase baja. Aunque los participantes favorecieron al latino en términos de simpatía, lo estereotiparon como un inmigrante poco inteligente. La cuestión del estatus también puede afectar a su trabajo e inteligencia. Este estereotipo encontrado en los datos fue que todos los hispanohablantes son inmigrantes indocumentados. Este resultado fue drástico para determinar los sesgos que puedan tener los futuros

policías hacia este grupo de personas. Además, puede influir en cómo tratan a los latinos con acento si automáticamente asumen o creen que no pertenecen a este país.

El último aspecto importante de los datos son las diferencias entre los sesgos lingüísticos y raciales. Por ejemplo, al tener que hacer coincidir las voces con sus caras, la mayoría de los participantes, sin importar en qué grupo estuvieran, eligieron la cara blanca. Este fenómeno demuestra un aspecto más complejo de la raza de los latinos. La identidad del latino no es una raza, es una etnia que se presenta en muchos tonos y colores diferentes. Hay más preferencia por el lenguaje que por el rostro. Los datos demuestran que estos participantes reconocen este concepto y entienden que los latinos no son solo lo que es estereotipadamente “latino”.

Si bien los resultados de este estudio son importantes, también es fundamental tener en cuenta las limitaciones presentes. Para empezar, el tamaño de la muestra era muy pequeño, lo que dificulta generalizar sobre una población más grande. Esto es un resultado a problemas de falta de respuesta y a que la encuesta fue completamente electiva para aquellos en la Academia de Policía de Westchester que la recibieron. Además, es importante demostrar que este estudio seleccionó a un grupo específico de agentes de la academia de policía del condado de Westchester. Debido a que se trata de una población específica, los resultados no se pueden generalizar a grandes poblaciones de policías en los EE.UU. Teniendo en cuenta estas limitaciones, hay espacio para que este estudio se replique en el futuro con una población más grande y diversa.

Al observar estos resultados, podemos implicar que hay más esperanzas para el futuro de la policía en

Nueva York. Aunque todavía existen problemas con los estereotipos, no son tan drásticos como podrían haber sido con la criminalidad. Es posible que el estereotipo de bandido todavía esté presente, pero ha sido desacreditado en esta área, ya que están cambiando la forma en que ven la cultura y las minorías en el condado de Westchester. Los latinos son una gran minoría en Nueva York e interactúan con la policía en su comunidad, tanto como otros grupos. Por esta razón, es importante profundizar en la investigación sobre la vigilancia policial y los prejuicios inconscientes hacia los latinos. Al investigar las relaciones entre los latinos y la policía, puede haber más confianza, comunidad y una mayor desacreditación de los estereotipos.

Conclusión

La cuestión general que este estudio intentó comprender fue si existían o no prejuicios inconscientes dentro de la policía hacia los hispanohablantes. Aunque hubo alguna evidencia de esto, no hay ninguna que apoye que estos sesgos tuvieran algo que ver con la criminalidad de los hispanohablantes. La barrera del idioma existe para separar a la policía de los latinos de una manera diferente a la esperada. Sin embargo, todavía existen generalizaciones y estereotipos sobre los hispanohablantes. En los últimos años, las políticas de inmigración han experimentado cambios significativos, especialmente con respecto a la regulación de los flujos migratorios y el trato a los inmigrantes indocumentados. Se han implementado políticas más restrictivas, como la intensificación de las redadas y la detención de inmigrantes, lo que ha generado un ambiente de miedo y desconfianza entre las comunidades hispanohablantes. Estos cambios también han influido en la relación entre

la policía y los latinos, ya que las prácticas de control migratorio pueden resultar en un trato más duro hacia esta población, incluso en situaciones no relacionadas con la inmigración. La necesidad de examinar cómo estas políticas afectan las interacciones entre la policía y los latinos es crucial para comprender las tensiones y desafíos actuales. Al observar la literatura discutida anteriormente, vemos que es necesario examinar más a fondo las generalizaciones hechas y la forma en que la policía trata a los latinos. Al continuar con esta investigación podremos comprender mejor la dinámica en juego y cómo mejorar estas relaciones.

Apéndice

Encuesta: “Conversation and Policing in New York”

Thank you for electing to fill out the following survey for my research on the future of the police system in New York. All responses will be anonymous and no emails will be collected by filling out the questionnaire. Please try to be as honest as possible in your answers and accurate to your personal beliefs. If you have any questions or would like to follow up on the project, you can reach me, Bella Landino, at ilandino@drew.edu.

[Nueva página]

[Preselección]

Please select a color to determine which group you are assigned to.

Red

Blue

[Nueva página]

[Los participantes que selectan “red” va a escuchar a la audio del no hispanohablante y “blue” va a escuchar a la audio del hispanohablante]

Please listen to the following audio recording and answer the proceeding questions.

[Audio del no hispanohablante]

<https://mote.com/m/88dbtmg>

[Audio del hispanohablante]

<https://mote.com/m/f6yxkdc>

[Nueva página]

How would you describe this person?

Educated	1	2	3	4	5	Uneducated
Reliable	1	2	3	4	5	Unreliable
Nice	1	2	3	4	5	Unpleasant

Select the adjectives that describe this person. Select all that apply.

Dirty

Lazy

Aggressive

Empathetic

Creative

Adventurous

Kind

What profession do you think this person has?

Gardener

Police Officer

Nurse/Doctor

Maid

Cook

Professor/Teacher
Construction Worker
Lawyer

What do you think is this person's education level?

12th grade or less
Graduated high school or equivalent
Some college, no degree
Associate Degree
Bachelor's Degree
Post-graduate Degree

How would you feel about interacting with this person? ____

How likely do you think this person is to commit a crime?

Not likely at all 1 2 3 4 5 Very likely

How much do you agree with the following affirmations?

This person is a criminal.

Completely disagree 1 2 3 4 5 Completely agree

This person is a gang member.

Completely disagree 1 2 3 4 5 Completely agree

This person is not a U.S. citizen.

Completely disagree 1 2 3 4 5 Completely agree

Now, please match the voice of this person to their face.

Option 1:

Option 2:



[Nueva página]

What is your race and/or ethnicity?

Native American or Alaskan Native

Asian

Black or African American

Hispanic or Latino

Middle Eastern or North African

White

Multiethnic

Other

What is your age? ____

What is your gender identity?

Male

Female

Non-binary

Other

Do you speak more than one language?

Yes

No

If yes to the previous question, do you speak Spanish?

Yes

No

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Friedreich's Ataxia (FRDA) and Gene-Editing Therapy

Sophia Kim

Abstract

Friedreich's Ataxia (FRDA) is a rare, autosomal recessive neurodegenerative disorder caused by a GAA trinucleotide repeat expansion in the FXN gene that results in reduced expression of frataxin. Deficiency in frataxin, a mitochondrial protein essential for iron-sulfur cluster biosynthesis, leads to mitochondrial dysfunction due to a lack of ATP production that develops into progressive neurodegeneration, loss of ambulation, hypertrophic cardiomyopathy, and early mortality. Current treatments, such as the FDA-approved drug Omaveloxolone (Skyclarys), focus on symptom relief rather than addressing the underlying genetic cause. However, with the addition of gene-editing therapy using technologies including CRISPR/Cas9 and zinc-finger nucleases (ZFNs), a future for directly correcting the FXN mutation exists. Recent studies have shown the potential of CRISPR-mediated excision of the expanded GAA repeat in hematopoietic stem and progenitor cells (HSPCs), dorsal root ganglia organoid-derived (DRGOs) sensory neurons, and ZFN-mediated induced pluripotent stem cell-derived (iPSCs) cardiomyocytes, showing partial restoration of frataxin expression and cellular function. While challenges remain, such as off-target effects and safety and efficacy concerns, gene therapy offers a viable treatment method for FRDA. This review

explores the latest studies for FRDA, assessing their efficacy and limitations for gene-editing therapy to be a potential effective treatment method for FRDA.

Introduction

Sam Bridgman loved playing baseball with his dad more than anything. At age 15, Sam's world changed forever. What started as occasional clumsiness evolved into a diagnosis for Friedreich's ataxia (FRDA) (Biogen Stories 2023). He faced a future of progressive loss of mobility, being wheelchair bound, and a drastically shortened lifespan. FRDA is a rare neurodegenerative disorder that is inherited autosomal recessively. First reported by German physician Nikolaus Friedreich in 1863 (Friedreich's Ataxia (FA) | Muscular Dystrophy Association (MDA) 2015), FRDA primarily affects the nervous system, heart, and pancreas. Though considered rare, affecting about 1 in 40,000 people worldwide, it is still the most common type of hereditary ataxia (Williams and De Jesus 2021). Hereditary ataxia is a group of genetic disorders characterized by a gradual loss of coordination and balance due to atrophy of the cerebellum resulting from inherited mutations (Jayadev and Bird 2013). Common symptoms of FRDA include difficulty with muscle coordination and walking, poor balance, frequent falling, slowness and slurring of speech, scoliosis (curvature of the spine), and difficulty of breath and swallowing (Ada Health 2025). The average life expectancy for patients is 37 years, and very often they will need a wheelchair.

Limitations with current treatments

Current developing treatments for FRDA include pharmaceutical drugs. In February 2023, the first FDA-approved treatment for FRDA, Omaveloxolone (Skyclarys), was made available to patients 16 and older (Fred Jonathan Edzeamey et al. 2024). The oral medication Skyclarys aims to improve mitochondrial

function and reduce antioxidant (oxidative stress) to support ATP production. Skyclarys and other developing treatments in various clinical phases do not directly address the underlying causes of FRDA, the genetic mutation of *FXN* gene, but increase the frataxin protein activity through replacement or enhancement. These pharmaceuticals may result in side effects as a result of not producing enough frataxin.

Gene-editing technology

Gene-editing technology offers the potential to rewrite the future of future FRDA-affected patients. The current, most prominent gene-editing techniques include CRISPR/Cas9 and ZFNs (National Institutes of Health 2020). Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR/Cas9), the most widely used gene-editing technology, is an RNA-based system that enables precise modifications to DNA sequences. Because it uses a guide RNA (gRNA) to direct the Cas9 enzyme to a specific DNA sequence for targeted cuts in order to add, delete, or replace genetic material, CRISPR/Cas9 is a powerful tool for genome editing and therapy (National Library of Medicine 2022). Zinc-finger nucleases (ZFNs) were among the first gene-editing tools to undergo clinical testing of genome-editing (for human cell resistance to HIV-1) (National Institutes of Health 2020). ZFNs have a similar mechanism to CRISPR/Cas9, but use artificially engineered DNA-binding proteins to target specific DNA sequences (proteintech 2023). Currently, CRISPR/Cas9 has shown its potential in human genetic disorders such as treating sickle cell anemia. This brings a potential for the use of gene-editing technology in directly treating the root of FRDA by correcting the

underlying genetic defect rather than merely managing symptoms. This paper aims to examine the potential of current gene-editing technology as an effective treatment for FRDA patients through a literature review.

Genetic basis of FRDA and frataxin deficiency

As an inherited disorder, FRDA is caused by a mutation in the *FXN* gene, with its dominant defining feature being a trinucleotide expansion of the GAA repeat sequence in intron 1 on chromosome 9. An unaffected, healthy individual usually has 6-29 GAA repeats, whereas in FRDA patients there are 66-1700 repeats (Figure 1). The problem with an expanded GAA sequence is the fact that the mRNA cannot be transcribed due to the trouble the RNA polymerase has with physically going through a longer and expanded sequence. The RNA polymerase fails to transcribe DNA to mRNA 90-95% of the time and therefore leads to the defect (Napierala 2023). Since mRNA cannot be transcribed, there is no mRNA available for protein synthesis and translation; as a result, the *FXN* gene is silenced. This is evident in blood tests for diagnosing FRDA, where the level of *FXN* mRNA and frataxin protein is the highest in the unaffected group, while the lowest in the FRDA patient group. It is also important to note that a carrier also has only half the amount of *FXN* mRNA and frataxin as the unaffected group, but is presented as asymptomatic.

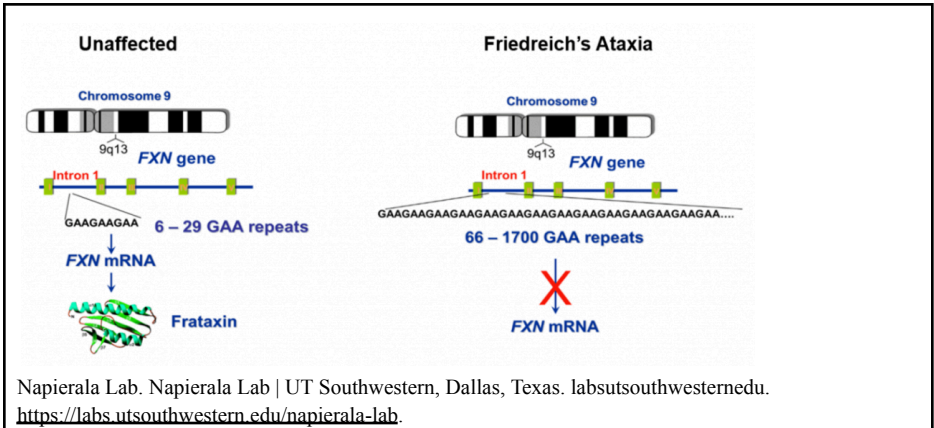
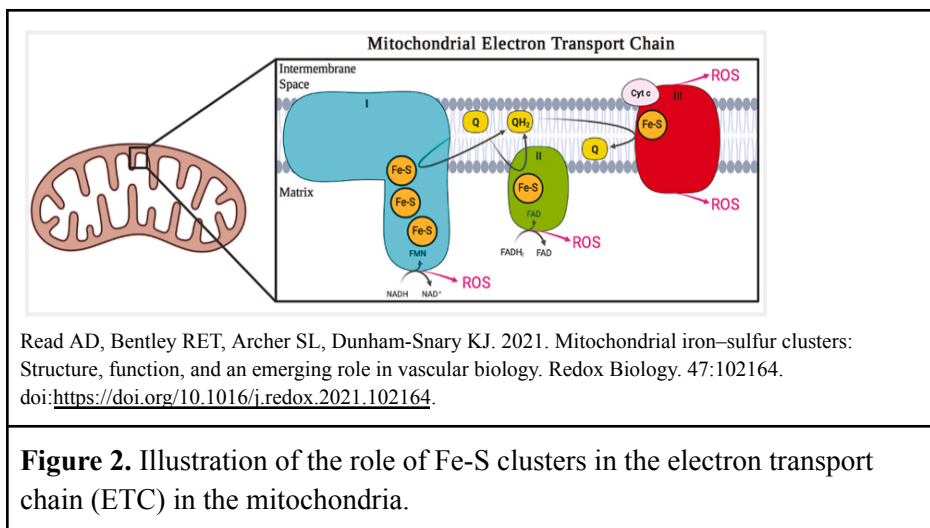


Figure 1. An example of the difference in the number of GAA repeats in unaffected, healthy individuals and FRDA patients, and a comparison of frataxin amounts.

The *FXN* gene is responsible for encoding the mitochondrial protein frataxin. Frataxin plays an important role in iron metabolism, storage, and, most importantly, in iron-sulfur cluster biosynthesis. Iron-sulfur (Fe-S) clusters play a critical role within complexes I, II, and III of the electron transport chain (ETC), regulating the mitochondrial iron accumulation to prevent oxidative stress (Llorens et al. 2019); this mitochondrial pathway can be seen in Figure 2. A mutated *FXN* gene represses the production of frataxin, leading to decreased activity in cellular respiration and ATP production, the energy for all processes. When this happens, major organ systems do not have enough ATP delivered to their pathways, which leads to major deficiencies in the body system. By examining a disorder impacted by a failure in mitochondrial function, the “powerhouse” of the cell, the organelle can be observed

and effective solutions to approach this issue can be investigated.



This paper provides a literature review on the potential for gene-editing as an effective treatment, and as a result seeing a recovery in the following major systems that are affected by FRDA. FRDA is most known for its effects seen in the central nervous system (CNS) and peripheral nervous system (PNS) and the heart. The effect on the CNS and PNS neurological pathways are seen to be the most common and prevalent. Among the CNS and PNS, the nerves, spinal cord, and cerebellum gradually degenerate over time, leading to the observed decreased muscle coordination, scoliosis, lack of balance, and lack of tactile sensation (Friedreich's Ataxia (FA) | MDA 2015). There is also an effect on the heart, with the most common heart abnormality in FRDA being hypertrophic cardiomyopathy. This is essentially an enlargement of

the cardiac muscle that affects the chambers of the heart, decreasing the pumping capacity and eventually leading to death by heart failure (Friedreich's Ataxia (FA) | MDA 2015).

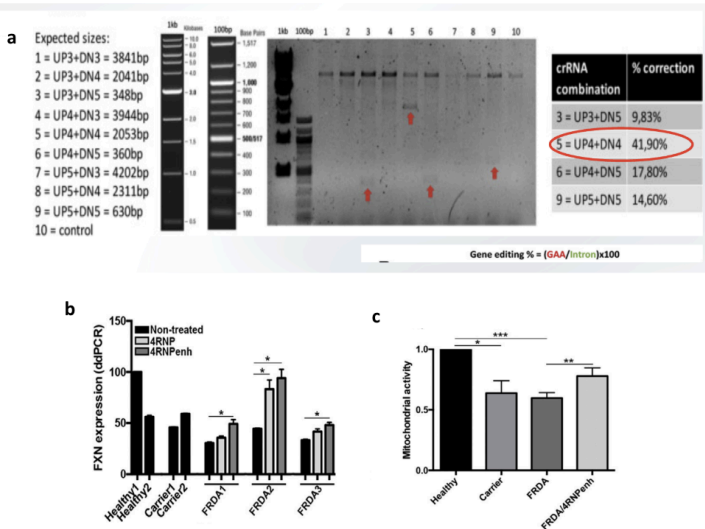
Literature Review

CRISPR-Cas9 and hematopoietic stem cells from FRDA patients

A 2020 project done by Rocca et al. with hematopoietic stem and progenitor cells (HSPCs) from FRDA patients provided results supporting the potential of using CRISPR-Cas9 to remove the GAA hyper-expansion in CD34+ HSPCs from FRDA patients. There was potential in the rescue of frataxin expression and function by using this method. The experiment was conducted using HSPCs based on results obtained from the previous study with YG8R mouse models, where HSPCs were able to prevent progression of the disease (Rocca et al. 2020).

The study was first conducted in FRDA hematopoietic lymphoblasts and 4RNP in order to test for the most optimal approach in using CRISPR-Cas9 technology for repeat excision in intron 1 before carrying out the test in CD34+ cells (Rocca et al. 2020). Results showed that the gene-editing efficiency was twice as pronounced in the cell lines of FRDA/4RNPenh, cell lines when electroporation of the 4RNP was performed in the presence of the enhancer. This is evident in the most optimal gene-editing efficiency in crRNA combination 5 = UP4/DN4 (41,190%) (Figure 3a). There were also significant increases in frataxin expression in all three FRDA/4RNPenh cell lines compared to the untreated cells (Figure 3b). Additionally, when observing the

mitochondrial activity, there was increased mitochondrial activity in the FRDA/4RNPenh cell line. Higher mitochondrial activity was seen when compared to both FRDA untreated and the carrier. These results suggest that CRISPR-Cas9 GAA gene-editing restored not only frataxin expression, but also mitochondrial function within the FRDA lymphoblasts (Figure 3c). These data were then used to model the optimal approach to remove the GAA hyperexpansion in CD34+ HSPCs.



Rocca CJ, Rainaldi JN, Sharma J, Shi Y, Haquang JH, Luebeck J, Mali P, Cherqui S. 2020. CRISPR-Cas9 Gene Editing of Hematopoietic Stem Cells from Patients with Friedreich's Ataxia. *Molecular Therapy - Methods & Clinical Development*. 17:1026–1036. doi:<https://doi.org/10.1016/j.omtm.2020.04.018>. [https://www.cell.com/molecular-therapy-family/methods/fulltext/S2329-0501\(20\)30078-4](https://www.cell.com/molecular-therapy-family/methods/fulltext/S2329-0501(20)30078-4).

Figure 3. (a) Agarose gel showing the long-range PCR amplification of the GAA expansion region in *FXN* intron 1 after gene-editing with different crRNA combinations. Optimal gene-editing efficiency was

found with the UP4/DN4 pair represented in combination 5. **(b)** Quantitative analysis of frataxin mRNA in healthy, carrier, FRDA, FRDA/4RNP, and FRDA/4RNPenh lymphoblasts. **(c)** Mitochondrial activity measured in healthy, carrier, FRDA, and FRDA/4RNPenh lymphoblasts.

The optimized 4RNPenh-mediated gene-editing was used in peripheral blood CD34+ cells from FRDA patients via an autologous stem cell transplantation approach. The CD34+ HSPC cells were first isolated from the peripheral blood of FRDA patients (Figure 4a and 4b) to be electroporated with the CRISPR-Cas9-gRNA complex in order for CRISPR-Cas9 to undergo action and delete the GAA repeat sequences in intron 1 of *FXN* gene. Regarding the steps in gene-editing with CRISPR-Cas9, target sites for Cas9 were selected from an array of guides, in this case sgRNA (single guide RNA), to create a ribonucleoprotein (RNP) that induces a double-strand break within the DNA sequence for the actual Cas9 edit using sgRNAs (Figure 4c). In this study, a deletion or knock-out was performed as the type of repair for FRDA CD34+ cells. Afterward, edited HSPCs were placed back into the culture to be reinfused into the patient. In theory, the edited HSPCs would be able to rescue the disease-affected functions of the internal body, such as the heart, brain, spinal cord, and dorsal root ganglion, by being able to source the insufficient levels of frataxin from before (Sivakumar and Cherqui 2022). Although a significant increase in frataxin (*FXN*) transcriptional (mRNA) expression was not observed (Figure 5a), the data was reanalyzed to determine a direct correlation

between the % GAA gene-editing and the level of *FXN* expression (Figure 5b).

a

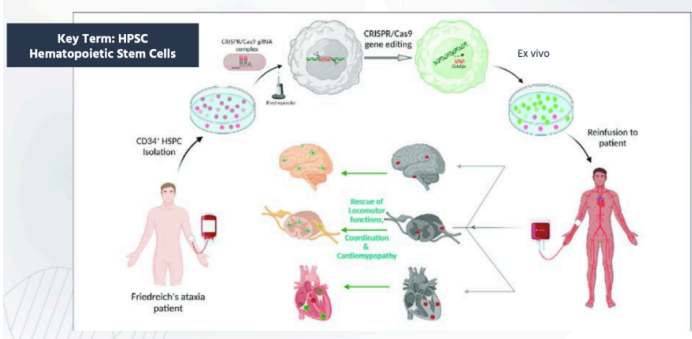
	Age (years)	Gender	GAA Repeats	Patient Relation
Patient 1	25	M	860/860	
Healthy 1	30	M	None	None
Patient 2	37	M	450/750	
Carrier 2	66	M	Unknown	Father
Healthy 2	36	M	None	None
Patient 3	48	M	640/149	
Healthy 3	43	F	None	None
Patient 4	45	F	870/745	
Carrier 4	79	F	Unknown	Mother
Patient 5	25	M	Unknown	
Carrier 5	62	M	Unknown	Father

Suppl. Table 3: Description of the volunteers participating in the study for CD34+ isolation from peripheral blood.

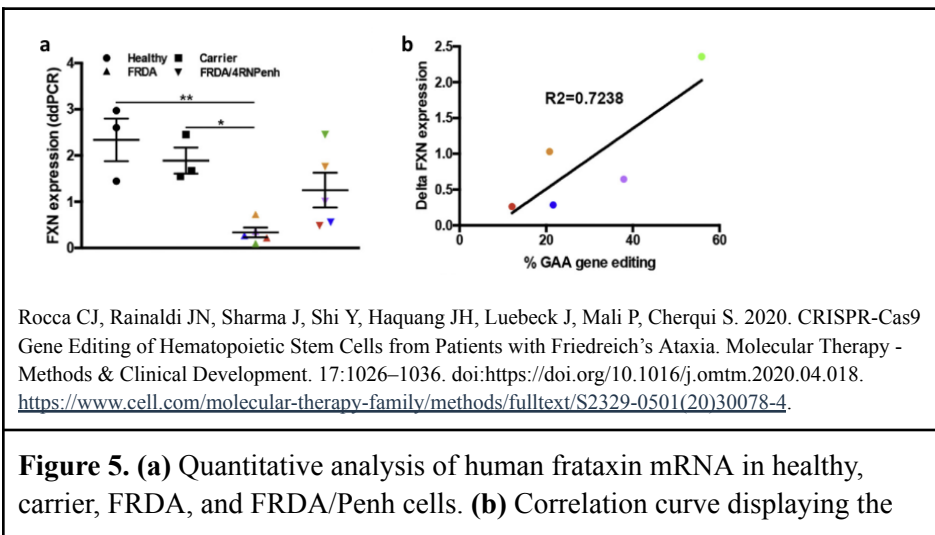
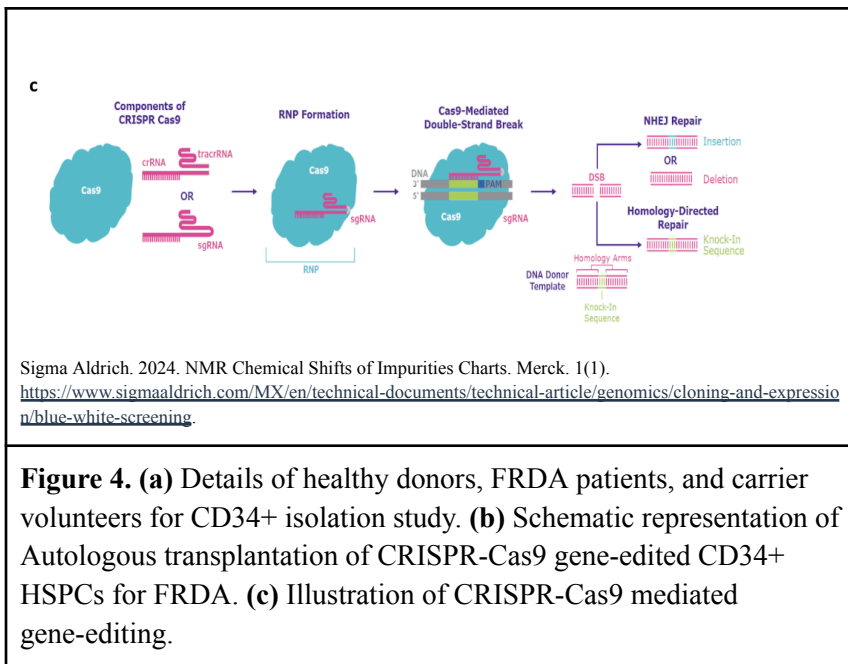
Rocca CJ, Rainaldi JN, Sharma J, Shi Y, Haquang JH, Luebeck J, Mali P, Cherqui S. 2020. CRISPR-Cas9 Gene Editing of Hematopoietic Stem Cells from Patients with Friedrich’s Ataxia. *Molecular Therapy - Methods & Clinical Development*. 17:1026–1036. doi:<https://doi.org/10.1016/j.omtm.2020.04.018>.

[https://www.cell.com/molecular-therapy-family/methods/fulltext/S2329-0501\(20\)30078-4](https://www.cell.com/molecular-therapy-family/methods/fulltext/S2329-0501(20)30078-4).

b



Sivakumar A, Cherqui S. 2022. Advantages and Limitations of Gene Therapy and Gene Editing for Friedrich’s Ataxia. *Frontiers in Genome Editing*. 4. doi:<https://doi.org/10.3389/fgeed.2022.903139>.



significant direct relationship between the % GAA gene editing and expression of human frataxin mRNA in edited CD34+ cells from FRDA patients.

The COSMID tool was used to assess the specificity of 4RNPenh-mediated gene-editing in FRDA CD34+ cells. This generated 6 potential off-target sites: AGAP1, UNC5D, LRP1B, RARB, EPHX2, and DGKG. PCR products were also sequenced and compared to PCR amplicons (replication) from the unedited FRDA CD34+ cells to validate no detectable off-target activities and make sure the gene was correctly edited. Additionally, confirmation of the removal of regulatory sequences, the mt-binding site and E-box regulation sequences, along with the GAA repeats did not impact frataxin expression in healthy cells.

CRISPR-Cas9 and dorsal root ganglia organoid-derived sensory neurons

There are some limitations within the models used and mentioned in the 2020 study by Rocca et al. With regards to the YG8R mouse model, there is a lack of display in human pathology as it can only provide mild neurological and peripheral symptoms of human cells (Mazzara et al. 2020). Additionally, the models using primary fibroblasts and lymphocytes from FRDA patients do not specifically exhibit the most defining characteristics of FRDA such as those within the neurons and cardiomyocytes, which cannot be obtained directly from patients (Mazzara et al. 2020 and Rocca et al. 2020). And although HSPC cells have their key advantages, they still have room for improvement to be

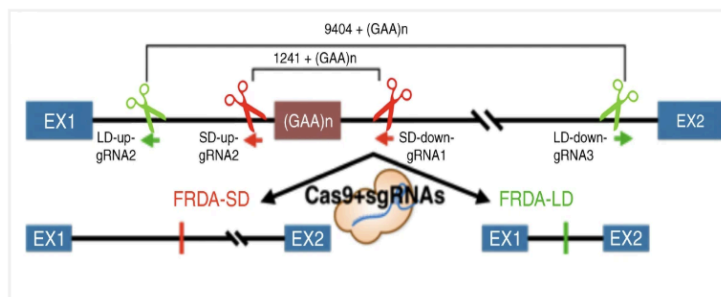
used for gene-editing efficiency in terms of reducing variability.

In a 2020 study done by Mazzara et al., FRDA-specific induced pluripotent stem cells (iPSCs) were generated, as well as an iPSC-derived sensory neuronal circuitry between dorsal root ganglion organoids (DRGOs) sensory neurons and muscle intrafusal fibers for an improved *in vitro* FRDA pathology model (Mazzara et al. 2020). The study specifically looked into the dorsal root ganglia (DRG) because one of the most prevalent symptoms of FRDA, the loss of postural balance and ataxia, is caused by the degeneration of DRG, peripheral nerves, and nucleus in the cerebellum (Mazzara et al. 2020). The study aimed to investigate mitochondrial restoration, Fe-S cluster protein biosynthesis and anti-oxidant response restoration, reactivating *FXN* expression, and axonal spreading and growth deficiency. For the purpose of addressing the potential of CRISPR as an effective treatment for FRDA, the focus will be presented on the latter two: *FXN* expression and axonal spreading morphology.

Methods

To build a stem cell model of FRDA, transgene-free iPSCs were created from fibroblasts of two patients, PTL and PTS. PTL represented early onset disease at age 13 and exhibited the prime of their symptoms at age 36. PTS developed a late onset disease at age 32 and presented with the majority of FRDA symptoms at age 52. The iPSC lines PTL6 and PTS36 were selected for each patient and the expanded repeats were deleted using CRISPR/Cas9 technology in order to produce two different deletions: SD and LD. SD, or

short deletion, was made by only removing the repeats, while LD, or long deletion, was done by cutting out almost the entirety of the long *FXN* intron 1 including the GAA expansion (Figure 6).



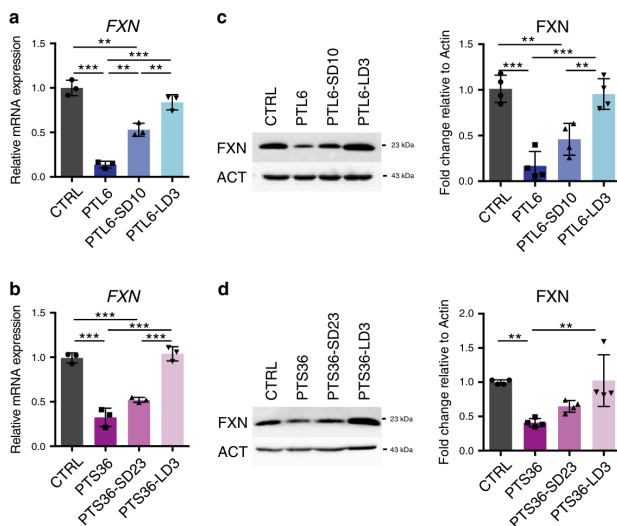
Mazzara PG, Muggeo S, Luoni M, Massimino L, Zaghi M, Valverde PT-T, Brusco S, Marzi MJ, Palma C, Colasante G, et al. 2020. Frataxin gene editing rescues Friedreich's ataxia pathology in dorsal root ganglia organoid-derived sensory neurons. *Nature Communications*. 11(1):4178. doi:<https://doi.org/10.1038/s41467-020-17954-3>. <https://www.nature.com/articles/s41467-020-17954-3>.

Figure 6. Illustration of CRISPR-Cas9 deletions in *FXN* intron 1 using pairs of sgRNAs to introduce short (SD) and long (LD) deletions based on whether the targeted excision are proximal sites or long distal sites when flanking the GAA tract respectively.

Reactivating FXN Expression Results

When comparing frataxin levels before and after the targeted excision of the GAA tracts, both PTL6-SD10 and PTL6-LD3 in all cases of Figure 7 showed greater relative mRNA expression with respect to PTL6 with no CRISPR-deleted derivatives. When comparing DRGOs with short deletion to long deletion, however, there was only a mild increase in frataxin mRNA and protein in short deletion compared to long deletion. Additionally, both deleted DRGOs never fully

reach the control DRGO levels. These results strongly suggest that the additional removal of the surrounding *FXN* intron 1 sequence may be necessary to obtain the most significant rescue of frataxin levels in DRGO cells. Overall, these results reveal that CRISPR gene editing can be used to improve mRNA expression and frataxin protein levels. Further evidence of this is seen in observing a greater fold change relative to actin in both edited deletions of PTL6 in comparison to the unedited PTL6. This greater fold change indicates an increase in gene expression, and therefore *FXN* gene expression is more pronounced within the edited cell lines.

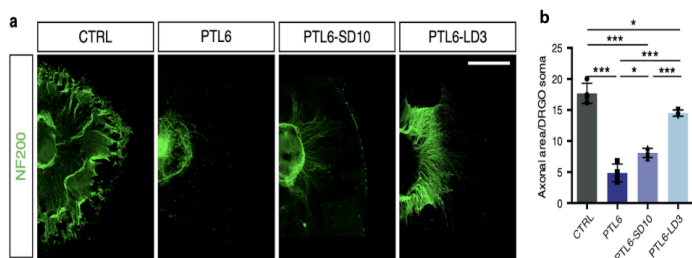


Mazzara PG, Muggeo S, Luoni M, Massimino L, Zaghi M, Valverde PT-T, Brusco S, Marzi MJ, Palma C, Colasante G, et al. 2020. Frataxin gene editing rescues Friedreich's ataxia pathology in dorsal root ganglia organoid-derived sensory neurons. *Nature Communications*. 11(1):4178. doi:<https://doi.org/10.1038/s41467-020-17954-3>. <https://www.nature.com/articles/s41467-020-17954-3>.

Figure 7. (a, b) Quantitative analyses of *FXN* gene mRNA expression levels in PTL6 **(a)**, PTS36 **(b)** and their respective isogenic targeted DRGOs. **(c, d)** Quantitative analysis of frataxin protein levels normalized to actin in control, PTL6 **(c)**, PTS36 **(d)** and their respective isogenic targeted DRGOs.

Axonal Spreading Morphology Results

When examining the FRDA-associated cellular and molecular impairments, the CRISPR-deleted DRGOs of the PTL6 cell line were focused. Compared to the unedited PTL6 cell line, both the isogenic -SD and -LD lines demonstrated an increase in axonal spreading over the dish (Figure 8a). When comparing the isogenic lines to each other, the axonal growth deficiency was only partially restored in -SD DRGO, while -LD DRGOs had almost fully rescued axonal growth. When comparing -LD DRGOs results with the control, there seems to be a closer resemblance to their spreading compared to the other cell line, thus providing further evidence for the potential of a longer deletion in the *FXN* intron 1 sequence. Quantitatively, this is observed with a higher axonal area/DRGO soma covered in PTL6-LD3 compared to both unedited PTL6 and short deletion isogenic lines (PTL6-SD10) (Figure 8c).



Mazzara PG, Muggeo S, Luoni M, Massimino L, Zaghi M, Valverde PT-T, Brusco S, Marzi MJ, Palma C, Colasante G, et al. 2020. Frataxin gene editing rescues Friedreich's ataxia pathology in dorsal root ganglia organoid-derived sensory neurons. *Nature Communications*. 11(1):4178. doi:<https://doi.org/10.1038/s41467-020-17954-3>. <https://www.nature.com/articles/s41467-020-17954-3>.

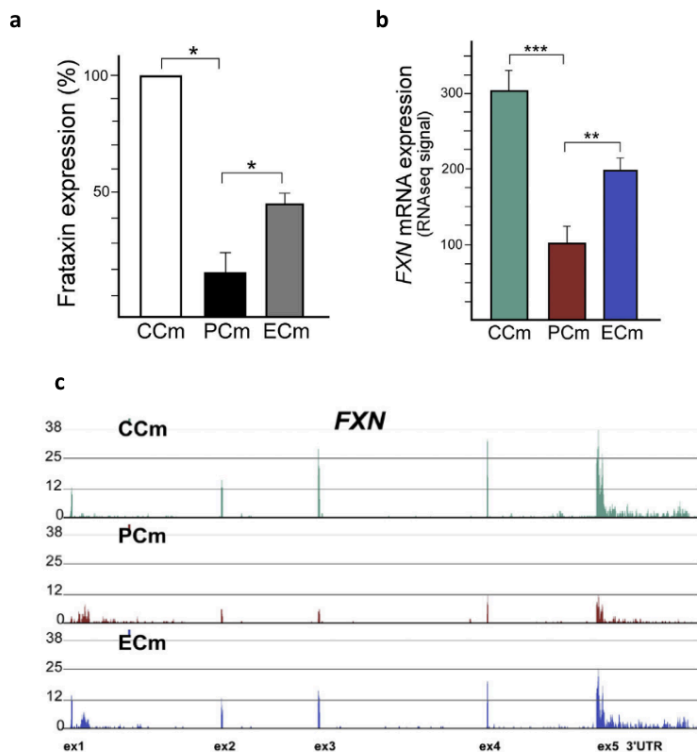
Figure 8. (a) Representative images of FRDA patient line-derived DRGOs comparing control, unedited PTL6, and short and long deletion isogenic lines. **(b)** Quantitative analysis of axonal spreading shown in representative images of 8a.

CRISPR-Cas9 and iPSC-derived FRDA cardiomyocytes

In a similar context to the research of Mazzara et al., Li et al. conducted research (2019) using iPSCs from cardiomyocytes (Cms). However, instead of using CRISPR-Cas9 technology for gene-editing, zinc finger-mediated gene-editing was used, which uses zinc finger nucleases (ZFNs) as gene-targeting tools (Carroll 2011). Although primary neurodegeneration of the dorsal root ganglia is the leading cause of the most prevalent symptom of progressive ataxia, hypertrophic cardiomyopathy is the leading cause of death in FRDA patients (Li et al. 2019).

iPSCs were used once again as more accurate cellular models that display the molecular defects of cardiomyopathy. The study aimed to present the effects

of the edited *FXN* gene and *FXN* expression in FRDA Cms. Features of control iPSC from unaffected individuals (CCms), FRDA iPSC from patients (PCms), and zinc finger (ZFN)-edited FRDA iPSCs (ECms) were compared. An approximately threefold increase in frataxin expression in ECms compared to PCms was observed (Figure 9a). Additionally, an approximately three-fold increase in the level of *FXN* mRNA expression using RNAseq data when comparing ECm cells to their isogenic counterparts (PCm cells) was observed (Figure 9b). This was further supported by the track display of RNAseq data, where the peaks at each exon site for ECm cell lines are relatively similar to the peaks of CCm cell lines, as opposed to the PCm cell lines (Figure 9c).

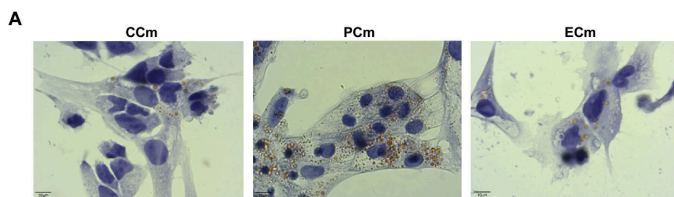


Li J, Rozwadowska N, Clark A, Fil D, Napierala JS, Napierala M. 2019. Excision of the expanded GAA repeats corrects cardiomyopathy phenotypes of iPSC-derived Friedreich's ataxia cardiomyocytes. *Stem Cell Research*. 40:101529. doi:<https://doi.org/10.1016/j.scr.2019.101529>.

Figure 9. (a) Quantitative analysis of frataxin levels in CCm, PCm, and ECm cells. **(b)** Quantitative analysis of frataxin mRNA expression in CCm, PCm, and ECm cells. **(c)** Representation of frataxin mRNA expression on a track display.

Lipid droplets evaluations were also performed for a cytological approach in observing FRDA cardiomyocytes. By using Oil Red O solution to stain the nuclei of PFA-fixed cardiomyocytes, results indicating

greater genetic correction of the expanded trinucleotide GAA sequence was observed. Having less accumulation of lipid droplets (LDs) is inversely proportional to the proportion of genetic correction. In Figure 10, the ECm stain in the number of “red drops” seems similar to the number in the CCm stain. In contrast, the PCm stain appears to have a much greater number of LDs compared to both CCm and ECm stains (Figure 10). These initial results help recognize potential in ZFN gene-editing for gene correction in the mutant *FXN* gene.



Li J, Rozwadowska N, Clark A, Fil D, Napierala JS, Napierala M. 2019. Excision of the expanded GAA repeats corrects cardiomyopathy phenotypes of iPSC-derived Friedreich's ataxia cardiomyocytes. *Stem Cell Research*. 40:101529. doi:<https://doi.org/10.1016/j.scr.2019.101529>.

Figure 10. Microscopy images of CCm, PCm, and ECm cells stained with Oil Red O.

Discussion

Summary of Findings

In all three studies, there was a common trend in the increase of *FXN* expression in the edited cell lines. These results support the claim that gene-editing techniques can be used as an effective treatment that targets treating FRDA directly, through the mutated *FXN* gene. There was also evidence of rescue in neuronal

functions, in particular with the iPSC DRGOs study, where the *FXN* gene was repaired enough for recovery of axonal spreading neuronal functions within edited cells. In the study using HPSC from FRDA patients, the results portrayed potential in gene-editing therapy research with HPSC, which was evident in the direct correlation between % gene edited and *FXN* expression. Additionally, in the iPSC Cms study that did not involve CRISPR technology, but instead ZFN-mediated gene-editing, further demonstration in increased *FXN* expression with a different gene-editing technique was observed. Overall, these results highlight the possibilities of gene-editing therapy and technology being an effective treatment for targeting FRDA.

Future of FRDA

Gene-editing therapy with CRISPR technology and ZFN-mediated edits offer a promising future for directly targeting the genetic mutations responsible for FRDA. By being able to offer this treatment plan, FRDA gene-editing therapy may make way for the application of gene-editing therapy in other neurodegenerative diseases such as Alzheimer's disease and Parkinson's disease (Nouri Nojadeh et al. 2023), and similar repeat disorder gene-editing treatments such as Huntington's Disease (HD) and Fragile X Syndrome (Napierala 2023). This will be an opportunity for advancements in gene therapy and precision medicine. Additionally, research done with gene-editing also increases the potential for blood stem cell research and further research involving iPSCs. To move forward with this research, future research should consider evaluating the safety and efficacy of gene-editing therapies, as well as its limitations to move into clinical testing phases. To

continue to see more research advancements with FRDA and gene-editing technology, more awareness of FRDA and rare diseases can be brought in by educating the public and being open to knowing about rarer conditions as opposed to the more commonly discussed and emphasized.

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Homosexual and Homicidal Maniac: Reading Hitchcock's *Strangers on a Train* as an Allegory for the Lavender Scare

Jocelyn Freeman

Abstract

In the early 1950s, the Hollywood Production Codes prohibited stories with explicit homosexual themes from appearing on the big screen, in turn shaping how the film industry presented gay stories. This essay examines how Hitchcock's *Strangers on a Train* (1951) presents a reaction to the Lavender Scare—an episode of the Cold War that resulted in the purging of gay Americans from government positions across the U.S.—without any overt mention of homosexuality. Instead, Hitchcock presents homosexual themes through the explicit use of coding. As this essay argues, in the film murder stands in for homosexuality. Following the murder that sets the film's plot in motion, the tension experienced by the protagonist is fueled by the threat of being discovered (or “outed”), a near constant surveillance by law enforcement, and the homoerotic dynamic initiated by the murderer. In reading the film as an allegory, the root of all this tension runs parallel to the anxieties about homosexuality held by the American public. In order to understand the contemporary constructions of homosexuality used in the act of coding, this essay puts secondary scholarship on Queer history and feminist

film theory in conversation with primary documents from 1950. Through using historical study in conjunction with a close analysis of the film, it becomes clear that there is more than meets the eye in *Strangers on a Train*.

The infamous director Alfred Hitchcock encountered a unique set of challenges when adapting Patricia Highsmith's first novel, *Strangers On A Train*, which tells the thrilling story of a double homicide with homosexual undertones set in the early 1950s.¹ For only \$6,000, Hitchcock purchased the rights to adapt the story and, in 1951, *Strangers on a Train* made its debut appearance in theaters.² However, since both violent homicide and overt homosexual behavior were considered too immoral to depict on screen, Hitchcock's adaptation took several liberties to tell the story. The film that resulted from the changes serves as an allegory for the paranoia unfolding in Washington, D.C. during its contemporary moment. As I argue in this essay, *Strangers on a Train (SOAT)* is an allegory for the persecution of gay Americans working in the federal government positions during the Cold War. It is worth noting that, in order to present a story about homosexuality, the film's content was carefully coded to suit the standards of Hollywood's strict Motion Picture Production Code. Through the use of distinct changes to the novel's location, the use of clear Queer coding to implicitly present gay characters through heterosexual constructions, and the motif of murder to represent the political implications of homosexuality, Hitchcock produces a story that champions Cold War conformity and morality in order to present a narrative which displays the persecution of gay Americans during the

¹ Highsmith is understood to be a lesbian by contemporary standards, and her work is often understood to have Queer undertones even when lacking explicitly gay characters.

² John Billheimer, "Strangers on a Train (1951)," in *Hitchcock and the Censors* (Lexington, KY: University Press of Kentucky, 2019), 167-175.

early Cold War.³ In other words, this essay explores the socio-political landscape of the early Cold War and Lavender Scare through a close analysis of the film using historical context to better understand how a film like *SOAT* utilized careful coding to successfully present a complex story about difficult and taboo topics.

While Hitchcock's film is acclaimed, critic John Billheimer characterizes the film as a "child's game of 'telephone,' in which a story is whispered from person to person and inevitably altered enough to make the final version barely recognizable."⁴ This critique is spurred by the fact that Hitchcock made several distinct changes to Highsmith's original story when adapting the novel for the screen. These changes were made in compliance with the Motion Picture Production Code—referred to as the Hays Code. The Code was in place from 1930 to 1968 and prohibited films from depicting "crime, wrong-doing, evil and sin."⁵ The Code presented strict standards for what could be shown on screen in an attempt to prohibit immorality from seeping into American life by way of the entertainment industry. For the purpose of this paper, it is vital to acknowledge that the Hays Code prohibited the depiction of "brutal killings" and "sex perversion."⁶ The Code embodied and

³ I use the word "gay" throughout this essay as the umbrella term it was understood to be in the 1940s and 50s. The word "Queer" will appear when discussing ambiguity, theory, or particular areas of study. I also use words such as "homosexual" and "homosexuality" in order to allude to contemporary documents and discourse.

⁴ John Billheimer, "Strangers on a Train (1951)." 167-175.

⁵ Motion Picture Association of America, "The Motion Picture Production Code," December, 1956. Margaret Herrick Library, Academy of Motion Picture Arts and Sciences. Hence referred to as "The Hays Code."

⁶ "The Hays Code." Note also that "sex perversion" was typically language used in official capacities to refer to homosexuality indirectly.

dictated the standards of morality held by the society within which Hitchcock produced his films.

Strict standards of morality manifested in response to the massive uncertainty faced on a global scale following the close of WWII. In the post-war years, an ideological conflict between the Soviet Union and the United States manifested through both popular and political culture. Episodes of hysteria concerning communist infiltration quickly conflated with anxieties about other subversive plots brewing just below the surface of placid American life. By the year 1950, homosexuality became so conflated with the threat of vaguely defined subversives and communists that large scale public attention turned to face the issue. Thus, a culture of blatant homophobia defined the 1950s, and widespread anxieties about post-war shifts in conceptions of gender and sexuality were met with new standards of sexual conformity. Heterosexual intimacy between a monogamous married couple defined “proper” sexual relations. Therefore, mainstream culture collectively defined acts of sexuality that fell beyond the acts of a married heterosexual couple as “perverse.”

Today, scholars, such as historian David Johnson, characterize this pervasive culture of homophobia as the Lavender Scare. The early events that spurred the Lavender Scare unfolded in Washington, D.C. Following Senator Joseph McCarthy’s infamous declaration that the State Department harbored an ever-changing number of Communists, a wave of national hysteria engulfed American headlines. In order to display a commitment to maintaining the moral fabric of American life, politicians along the Potomac committed themselves to weeding out subversives

“hiding” within the Federal Government.⁷ Unable to uncover a satisfying number of card-carrying communists within the State Department, attention instead turned to the startling number of homosexuals uncovered through internal investigations conducted in the late ‘40s. In February of 1950, the undersecretary of the State Department admitted that, in just three years, the department had released 91 employees on suspicion of their homosexuality. In the eyes of the American public, this ‘purge’ further solidified the reality of the existence of homosexuals within the American government. Furthermore, the pages of Washington tabloids and gossip columns exposed the capital’s underground gay subculture for the sake of entertainment. The events unfolding in Washington linked the city’s reputation to stories of subversive homosexuals.⁸ Such historical context is necessary to understand why the changes made by Hitchcock allude to an allegory presented in *SOAT*.

Highsmith’s story originally takes place in a handful of locations across the American Southwest, yet, the events of the film adaptation unfold in the North Eastern Corridor with a main focus on Washington D.C. Scholars argue that such a drastic change was glaringly intentional. One critic, Robert J. Corber, claims the *SOAT* film adaptation is a political allegory for the events unfolding in D.C. in the early 1950s. In understanding the socio-political landscape of D.C. in the early 1950s, Hitchcock’s amendment to *SOAT*’s

⁷ David Johnson, *The Lavender Scare: The Cold War Persecution of Gays and Lesbians in the Federal Government* (Chicago, IL: University of Chicago Press, 2004).

⁸ Ibid.

original location serves as evidence for Corber's reading. Corber argues that while the "function" of "monumental backdrops is not readily apparent," yet allegorically, "the monument translates into visual terms that cold-war conflict [is] at the heart of the film."⁹ Since the Hays Code prohibited explicit depictions of homosexuality, a story about the Lavender Scare could only exist as an allegory. During this era of censorship, the viewer is expected to read between the lines in order to fully engage with the story. An American engaged with the headlines syndicated through national newspapers would have been aware of discourse surrounding the gay purges in Washington; thus, the film's setting guides the viewer's mind towards parallels with contemporary events.

Throughout the film, other subtleties, such as the ones previously described, are used to allude to the themes of homosexuality central to the story. Hitchcock uses a mid-century heterosexual understanding of homosexual characteristics to portray identifiable gay characters for his audience. The critic Robin Wood asserts that, within Hitchcock's films, "homo-sexuality had to be coded."¹⁰ As another critic, Alexander Doty, explains, "Hitchcock's films speak volumes about his encounters with straight culture's contradictory and often incoherent ideas about queerness."¹¹ In order to produce

⁹ Robert Corber, "Hitchcock's Washington Spectatorship, Ideology, and the 'Homosexual Menace' in *Strangers on a Train*," in *Hitchcock's America*, Eds. Jonathan Freedman and Richard Millington (Oxford: Oxford Press, 1999), 99-122.

¹⁰ Robin Wood, "Letter to the Editor" [response to Hepworth's claims above] in *Out in Culture: Gay, Lesbian, and Queer Essays on Popular Culture*. Eds. Corey K. Creekmur and Alexander Doty. (Durham: Duke University Press, 1995) 194-195.

¹¹ Alexander Doty, "Dossier on Hitchcock: Introduction," in *Out in Culture: Gay, Lesbian, and Queer Essays on Popular Culture*. Eds.

a gay character that a heterosexual audience would recognize, “coding” was required, despite its problematic outcome. Hitchcock navigated presentations of gay characters within the restrictions of the Hays Code. Unfortunately, this often meant aligning his overtly gay characters with the homophobic understanding of Queerness held by a heterosexual, contemporary audience.

Commonly held ideas about homosexuality in the postwar era lacked nuance and instead manifested as rigid binary constructions that maintained heterosexual conformity. One especially pertinent congressional committee report published in 1950, titled “Employment of Homosexuals and Other Sex Perverts in Government,” lays out the contemporary understanding of homosexuality clearly. The report reads, “the overt homosexual of both sexes can be divided into two general types; the active, aggressive, or male type, and the submissive, passive or female type.”¹² This binary is exemplified within *SOAT* by the relationship between Bruno Anthony, commonly considered the antagonist, and Guy Haines, the film's protagonist.

Hitchcock's presentation of Bruno is typically considered by critics to be overtly gay and, thus, fills the role of the “active male homosexual.”¹³ Close up shots of the details of Bruno's flamboyant style are introduced to the audience upon the opening of the film, producing an outward display of Bruno's sexuality. The audience is then shown Bruno's overly close relationship with his

Corey K. Creekmur and Alexander Doty.(Durham: Duke University Press, 1995) 183.

¹² Committee on Expenditures in the Executive Departments, “Employment of Homosexuals and Other Sex Perverts in Government,” November 27, 1950.

¹³ Ibid.

mother in contrast to the vengeful relationship he maintains with his father. Due much in part to Sigmund Freud's popular psychoanalytic theories, such a parental relationship would clue a contemporary viewer into Bruno's homosexuality. Importantly, the audience is also presented with Bruno's relentless pursuit of Guy. Bruno's pursuit aligns with the construction of the "active homosexual." The 1950 Committee Report states, "this active type is almost exclusively attracted to the passive type of homosexual."¹⁴ Therefore, Bruno's active homosexuality cannot be understood without a passive counterpart present.

For this reason, I argue Bruno is not the only homosexual portrayed in the film. Analysis of *SOAT* often fails to understand Guy as a homosexual. However, in examining Guy's character within the purview of the active/passive binary, it becomes obvious that Guy is the inverse half of Bruno's active homosexuality. When presented in a scene alongside Bruno, it is clear that Guy is the more effeminate character—consistently lacking agency and existing as an object of Bruno's desire. When viewing the film using this binary construction, Guy is not merely Bruno's antithesis but, instead, one half of the film's central homosexual relationship.

This homosexual relationship is further bolstered through the film's focus on the act of watching. Laura Mulvey, a notable feminist film theorist, considers acts of voyeurism a masculine assertion of power. Mulvey describes the binary construction of the watching relationship, writing, "pleasure in looking has been split between active/male and passive/female."¹⁵ Mulvey goes

¹⁴ Ibid.

¹⁵ Laura Mulvey, "'Visual Pleasure and Narrative Cinema,'" in *Film Theory and Criticism: Introductory Readings*, ed. by Leo Braudy and

on to describe the act of watching as “erotic.”¹⁶ Such a gendered binary used in Mulvey’s theory is complicated when members of the same gender watch one another. *SOAT* consistently employs the act of watching. Yet, within the film, the acts of watching and being watched do not operate along a gender binary, but instead feature one man watching another, thus presenting a homosexual construction.

The film opens with Bruno gazing at Guy when the two first meet on a train bound for New York. Within the first few scenes of the film, the audience understands that Bruno’s gaze rests almost exclusively upon Guy. The watching is present through the remainder of the film. Bruno looks on to Guy’s Washington home from a dimly lit curb on Capitol Hill prior to an intense confrontation that sets the film’s plot in motion. Later, at a tennis match, an audience of spectators move their heads from side to side to track the movement of the ball while Bruno’s eyes, in stark contrast and stillness, rest on Guy alone. Bruno is not interested in the game; instead, he is interested in Guy. When the men are alone with one another in Bruno’s mansion, Bruno trains his eyes on Guy while he aims a loaded pistol at him, adding an undertone of erotic desire to the vulnerable position Guy finds himself in. In these instances, Bruno’s gaze is so deeply fixed on Guy that he doesn’t even blink; Bruno seems transfixed and infatuated with the man he’s attached himself to. Within these scenes, little to no dialogue is employed. Instead, sitting with an increasingly eerie score, the audience is invited to

Marshall Cohen. (New York: Edinburgh University Press, 1999), 808-809.

¹⁶ Ibid.

inspect Bruno's gaze and dissect the undercurrent of homoeroticism.

Mulvey's theory is useful in exploring how Bruno's gaze operates in a homoerotic way. Bruno, gaining visible pleasure from the act of watching Guy, is the "active/male" onlooker. He uses his gaze to achieve his desire—convincing Guy to murder Bruno's overbearing father. The insistent watching acts as a threatening measure used to coerce Guy into keeping up his end of the deal. Through reading about Guy, Bruno understands that he can be influenced because of his political ambitions. Bruno's watching literally activates the plots—constantly presenting challenges that Guy is forced to react to in order to save his reputation. Bruno plays the active role throughout the film. Guy is the object of Bruno's observation and persuasion, making him the "passive/female" according to Mulvey's binary construction.

Guy is watched constantly throughout the film not only by Bruno but also by larger society. As a prospective politician, Guy is worried about maintaining his reputation in the eyes of potential voters. This anxiety is exemplified through the gossip pages of the paper already watching him. Thus, he is afraid of the scandal his wife Miriam threatens to stir up and, later, of his reputation being tainted by her subsequent murder. Society's prying eyes are also exemplified by the rotating policemen committed to surveilling him 24/7. Guy, in pursuit of maintaining respectability and clearing his name, lacks the agency to object to the surveillance. In turn, he plays the passive role not only in relation to Bruno but instead in society at large. This demonstrates Guy's role in a passive homosexual capacity beyond his initial connection to Bruno's active homosexuality,

displaying the ways in which Bruno coerces Guy into taking on his own gay identity. Still, no explicit mentions of homosexuality exist within the film. Instead, the acts of voyeurism help convey this relationship without the need to explicitly state that the men are homosexuals.

The two men's homosexual identities are further bolstered when you realize that Hitchcock commonly displays "sexual abnormality" within the male murderers in his films. Men, such as Uncle Charlie in the 1943 film *Shadow of a Doubt*, Norman Bates in the 1960 film *Psycho*, and Bob Rusk in the 1972 film *Frenzy*, all harbor "irregular sexual habits" and, in turn, homicidal ideations. For Hitchcock's murderous men, anxiety surrounding sexual conformity and subsequent frustration spurred by this failure to conform manifest by way of murdering women. Within *SOAT*, homicidal ideations specifically stand in for homosexuality, a psycho/sexual infliction within the context of the 1950s. While neither Guy nor Bruno blatantly admit to being homosexuals, the two men are connected in an intense and secretive relationship by the murder of Guy's wife, Miriam. Bruno murders Miriam and works tirelessly to coerce Guy into committing a murder himself. In the 1950s, homicide and homosexuality posed a similar threat—social condemnation. Guy spends the entire film attempting to escape his connection to Bruno as he is afraid of the consequences he will face for being connected to Miriam's murder. Failure to conform to the ideals of proper citizenship, proper morality, and proper sexual standards only increases the consequences that come with being caught up in a murderous scheme. This anxiety also manifests in the fear of guilt through association, mirroring the suspicion placed on associates of subversives.

Bruno's commitment to coercing Guy into murder displays the ways in which homicide and homosexuality are explicitly tied together in the film. Importantly, in the 1950s, influential stakeholders feared homosexuality was a condition which could be inflicted upon unsuspecting victims through social exposure, in turn threatening corrupting sexual morality within communities harboring homosexuals. Guy is first introduced as a clean-cut aspiring politician. However, following his chance encounter with Bruno, Guy's trajectory changes dramatically. When Bruno suggests committing a "criss-cross murder" to eliminate the people causing them disdain in their lives, Guy is originally put off by the idea, making a quick escape from Bruno's proximity and hoping to put the connection behind him. However, the idea of homicide had been planted in Guy's mind. Once off the train, in a short phone conversation between Guy and his lover Ann, Guy makes a reference to wanting to strangle Miriam. The homicidal inclination spreads from Bruno and infects Guy, similarly to how a heterosexual public assumed homosexuality spread. Bruno further "recruits" Guy by actually committing the murder of Miriam, tethering the two men together through the homicide. Their dynamic for the remainder of the film mirrors the passive/active construction of homosexuality.

In 1950s Washington, an allegation of homosexuality against a politician or aspiring politician proved a damaging blow to a career. In other words, allegations, based in fact or based in fiction, proved viable weapons for ruining political opponents' reputations. In turn, such allegations were used as political capital by individuals in pursuing personal agendas such as promotions, re-election, or establishing

credibility.¹⁷ When reading *SOAT* as an allegory for the Lavender Scare, the murder of Miriam acts as a stand-in for the political power tied to homosexual accusations. Instead of accusations of sexual perversion, Guy spends the entire film attempting to clear his name following the allegation that he murdered his wife. Meanwhile, Bruno uses Miriam's murder to hold power over Guy. When Guy refuses to kill Bruno's father and threatens to reveal the plot to the police, Bruno employs the threat of exposure. Once again Bruno is the active character, attempting to recruit Guy into committing a homicidal act, similarly to the way an active homosexual "threatened" to induct impressionable heterosexuals into a homosexual lifestyle.

This link between murder and homosexuality is the central theme that makes the film palatable for both a board of censors and the American public. Because Guy is able to correct himself, escaping a homicidal scheme and, in turn, escaping homosexuality, Hitchcock is able to present the story on the big screen while remaining in compliance with Hays Code. In Highsmith's novel, Guy is eventually driven to murder Bruno's father. However, Hitchcock changed this ending to comply with the Hays Code and instead replaced the slaying of Bruno's father with the death of Bruno himself. Thus, the condemnation of a Queer coded murderer is brought about in a dramatic and violent fashion. In other words, the murderer and active homosexual character receives due consequence in alignment with the desires of the censors. However, Guy, the passive half of this dynamic, is a stand-in for curable homosexuality. This Cold War

¹⁷ Naoko Shibusawa, "The Lavender Scare and Empire: Rethinking Cold War Antigay Politics." *Diplomatic History* 36, no. 4 (2012): 723–52. <http://www.jstor.org/stable/44376170>.

film champions American morality by ensuring Guy not only evades consequences but is also painted as the hero of the story. In the eyes of a 1950s audience, the strength needed to overcome homosexual tendencies, subversion, and violence is where the true heroism of the story lies. Hitchcock presents a story of redemption with Guy at the center.

I argue that Hitchcock's *SOAT* presents an allegory outlining the Lavender Scare to critique the conflation at the heart of the conflict. Hitchcock presents audiences with a homosexual murderer, but also a homosexual hero, proving that the film's Queer undertones are more complex than they appear. Critiques of *SOAT* often fail to examine both Bruno and Guy as two distinct halves of the heterosexual construction of homosexuality—however, consideration of both men and their dynamics is necessary when examining the allegory presented by the film. The story that unfolds is concerned with condemnation, morality, and Washington during the height of the Cold War. Hitchcock innovatively tells this story despite the Hays Code and effectively portrays a critique of how heterosexual power structures viewed Queerness in the 1950s.

Today's viewer, perhaps unaware of the complex history of the Lavender Scare, risks overlooking the allegory present in *SOAT*. Today, for many, the Lavender Scare is an obscure historical episode. However, for the duration of the Cold War, pervasive homophobia went unquestioned and took a major role in defining the cultural moment. Engaging with films from the period, such as *SOAT*, gives a modern-day viewer the chance to engage with the ways in which creatives, such as Hitchcock, interpreted the moment itself and navigated challenges such a moment presented. Over the past three

decades, historians have dedicated a vast amount of time and energy to the study of the Lavender Scare. The study of films, properly placed in their historical context, can add to the field of LGBTQ+ history by providing pivotal understandings of how larger societal factors have shaped the media. The study of the Queer past can also help strengthen modern interpretations of Cold War era films. Questioning heterosexual constructions, implicit biases, the constraints of the studio system, and the discourses of a contemporary moment through understanding the historical context allows for critics to understand the signals they may otherwise miss. This analysis of *SOAT* is an attempt at performing such an interdisciplinary exercise, to better understand the film, the past, and what we risk overlooking.

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