LOGOS

A Journal of Undergraduate Research

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EDITORIAL STATEMENT

Dear readers,

The *LOGOS* student and faculty editorial staff are pleased to introduce Volume 13, arguably one of our most ambitious editions to date. As we reflect on this year-long production cycle, it is difficult not to think about the historic circumstances surrounding it. Like many people during the COVID-19 pandemic, the student editorial team was required to adapt to the challenge of navigating our new, remote world. Beyond that, our student authors responded to the pandemic and the situations they saw in their own communities with quality research and insightful submissions.

As we began accepting pieces for publication in Volume 13, two distinct themes began to present themselves. The first, and most obvious, was that of social inequality and the pursuit of social justice. The second was that of family and making sense of grief. While not by design, as Volume 13 was not explicitly a themed edition, it seems our students have a finger on the pulse of current issues in their world. These pieces represent the concerns students have, what they are thinking about, and what they are seeing and experiencing as opportunities to make positive change.

The pieces in this Volume work together to tell a cohesive story about the state of our world as students experienced it during the last year. From navigating a global health crisis, during which many of our students were separated from or spent extended time with their families, and experienced loss in all forms, to living in a renewed fight for civil rights for all people, Volume 13 is as much about the state of affairs in 2020 America as it is about showcasing exceptional student work and innovation.

Since its inception in 2008, *LOGOS* has been committed to publishing high-quality, cutting-edge research, artwork, and creative writing produced by undergraduate students at Missouri State University. We have also committed to offering a safe and inclusive environment for students to engage in the vulnerable act of submitting their work for critique and scrutiny and experiencing the often-intense world of academic publication for the first time. As a publication, we strive to introduce and amplify new voices to the conversation and creation of new knowledge, particularly those voices that may otherwise be silenced, whether by bureaucracy and red tape in the professional world or by systemic barriers that exclude minority students and professionals from sharing their perspectives.

With Volume 13, we reaffirm our commitment to our readers, our stu-

dent body, and our student and faculty editors to continue providing a forum that challenges the status quo and expresses part of the human condition, invites underrepresented student voices into the ongoing academic conversation, showcases the best of what's happening around Missouri State University, and provides low-risk, high-reward opportunities for students to improve their writing and learn more about publishing in their field.

We hope you enjoy reading Volume 13 as much as the we have enjoyed putting it together, and we hope to include your submission in the next volume.

Sincerely,

The *LOGOS* Editorial Staff

DEDICATION

We would like to dedicate this volume of *LOGOS: A Journal Of Undergraduate Research* to all of the past and present Missouri State University students who work in the medical field. Very few people have made it through this year untouched by the global COVID-19 pandemic, but the nurses, doctors, assistants, and many others in this field have worked their hardest to provide the utmost care for patients and families, both physically and emotionally.

Thank you for all you have done and continue to do during this difficult time.

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Reynolds College of Arts and Letters

Black Lives Matter: The Future

Angel Ford

Abstract

For my illustration class we were given an assignment to create a social justice poster for a cause that we are passionate about. As a black woman, I wanted to express the importance of the Black Lives Matter movement by showing a carefree black girl determined to be unapologetically herself. I decided to use soft pastels as my medium because of the textures they can create and the way the colors blend together to create a sense of whimsicalness. I wanted to show her carefreeness with her voluminous hair by having it extend outside of the page. Her hair represents how, regardless of the obstacles that society creates for her, she will always thrive and continue to be free. This Black girl represents the strength and triumph of the Black community during times of injustices and adversity. I decided to add the quote, "My grandparents didn't accept racism, and neither will I," to show that racism is not an old concept that my grandparents went through. Racism is alive and continues to plague the Black community. This quote also embodies the strength of Black people and how that strength will continue with future generations. Overall, I wanted this illustration to embody the grace and strength of the new generation, and their willingness to stand up against racism.
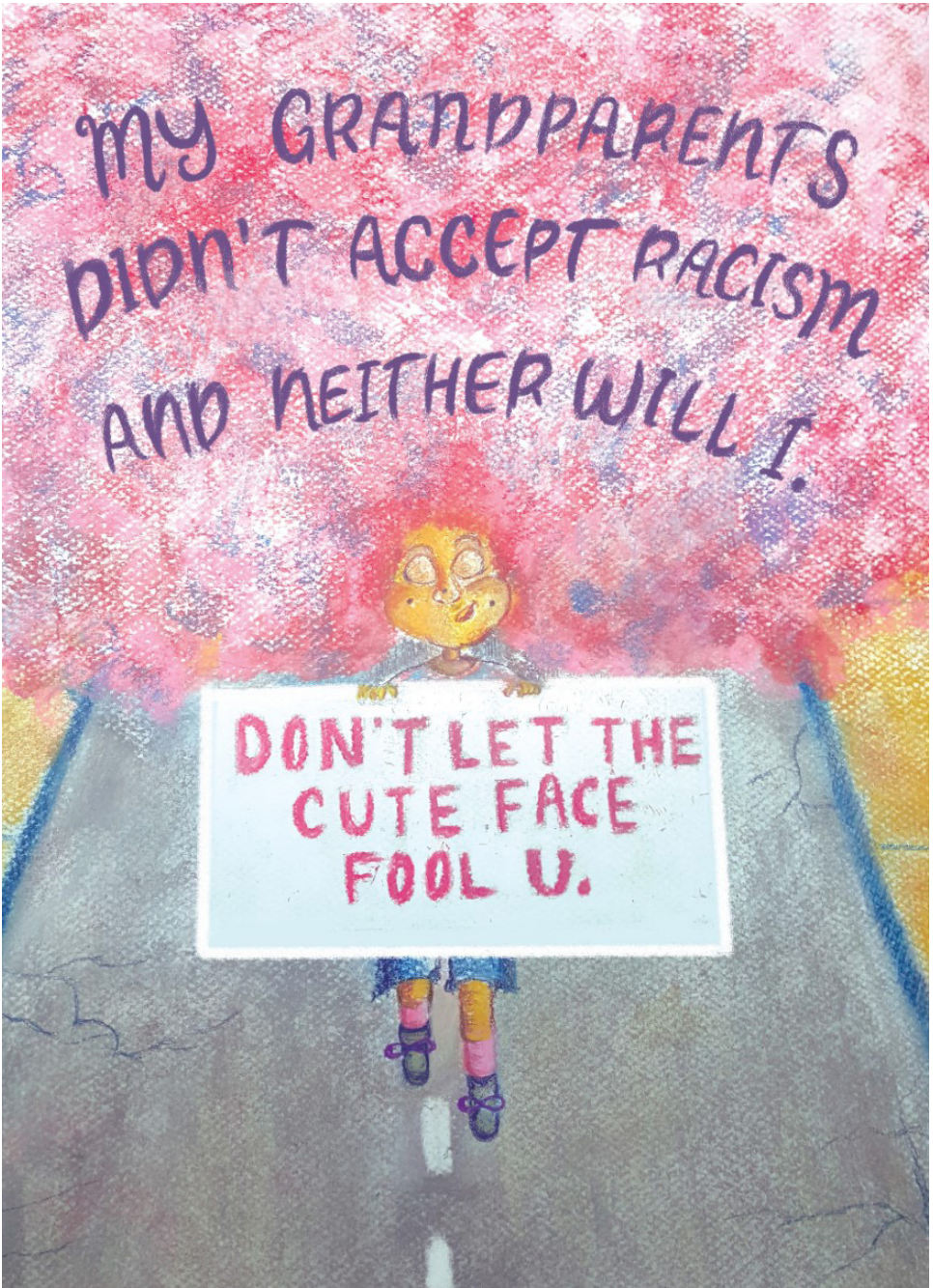
Black Lives Matter: The Future. Artwork by Angel Ford.

BEFORE HE DIED

Taylor Ware

Abstract

The following piece is titled "Before He Died" and was initially written for ENG 303 Creative Writing: Poetry II. "Before He Died" is inspired by a memory from childhood with my late grandfather. The poem ventures to explore a nostalgic and serene moment through the lens of longing. The dramatic situation at play depicts a much larger theme. At the conclusion of the poem, I intended for the reader to be met with a sense of peace. There are images of a butterfly laced throughout the poem, which symbolize details of my grandfather's life that are not necessarily meant to be known to the audience. However, these sensory details communicate a disquieting tone and, hopefully, lead the reader into their own conclusions about the poem's context. I utilized enjambment and metaphor as well as a sense of musicality and rhythm to construct this poem. "Before He Died" attempts to depict the acceptance of death via child-like wonder and naivety.

My grandpa
plucked a butterfly
from a bush.
He curled his fingers
around the wings and placed it
in the pocket of his fading
blue jeans. At the house,
I watched
as he pulled the butterfly
from his pocket and dropped
it into a jar. He held it out
for me to see. The little
orange wings
righted themselves
and the creature began
to flit about the jar. My fingers fled
to the glass, tracing warily
the erratic pattern of flight.
As I tried to pull it close, he lifted
the jar to the window
and set free
the tiny monarch.

We stood together as it drifted off
aglow in the light of an evening sun.

July Something

Colleen Noland

Abstract

Growing up in the southern United States has often shaped my fiction wherein the narrators must grapple with their paradoxical love and contempt for the setting. "July Something" is a flash fiction stylized monologue that explores this concept and attempts to capture an instance of trauma and beauty of one LGBTQ+ character's North Carolinian childhood.

I keep coming back to you, Riley, remembering you in the normal places. Send you predictable questions like *How are you* or *What have you been up to* when I drive down the army suburbs surrounding Fort Bragg and the heat melts the concord grape car freshener that I have hanging from my rearview. Steve, my boyfriend, hates it because it doesn't actually smell like the plump, fleshy fruit that my father grew in our backyard—just like a bunch of sugary Great Value juice spilled and no one cared enough to clean it up. But it is close enough for me to snatch glimpses of you in seventh grade picking the swollen, purple beads from my dad's trellis, eating them without bothering to brush the dirt from their clammy North Carolinian skins.

I think you'd like Steve. I started loving him two months after we met in my Abnormal Psychology class at Duke and he introduced himself by asking me what the phrase *brachiosaurus energy* meant written on my hand. It was a dumb joke with a friend, but I guess he liked my answer because he decided to stick around, and he's been asking me dumb, gorgeous questions ever since. I've told him about you, and he thinks it's cute. How I had the biggest crush on you after you moved in next door and how we would build small stick forts in our backyards for no reason other than to do it. To me, the curly red hair that dropped down almost to your elbows was exactly like the princess in that picture book I used to read as a kid, alone in my room, with its glossy purple binding and evil goblins. I used to read it even after I felt too old and embarrassed to own something so infantile, trying to imagine myself as you, or you as the princess.

One day after looking at it, I finally grabbed a sparkly, pink marker and wrote RILEY on a random date in my calendar of dachshund puppy pictures. I tell Steve that story when he asks me, and I don't mind reopening it. On nights when I've got my leg laying right next to his on our apartment bed, just so he knows it's there as I lift up his polo and slip the testosterone needle into his lower back. I am good at distracting his body from its fixedness, putting words in front of the pain instead of framing it.

July something. It's funny what I can and can't remember; I remember that your face was a wet rose petal in the hot summer gasses but not the actual day I asked you, even though I wrote it down on every science worksheet to make sure that I didn't forget. The types of rocks that year were igneous, metamorphic, sedimentary—and July something. July something replaced Pluto as the ninth planet. Mrs. Lancashire started writing me feedback like *Really, Jessica? July something is a catastrophic weather pattern now?* Steve thinks that is hilarious.

But I did finally ask you, July something, when we were both filling ourselves with the plastic cups of ice water my father had brought us after an

evening bouncing on my trampoline. We shed occasional drops of water from our skin while our stomachs burst with a debilitating, drowsy coolness. The smooth black static cradled us as we listened to my father wash the dishes inside and watched the heat warp the top of your roof next to mine. I imagine your hair was lifted slightly by the electricity and created some kind of sunset halo, something like the princess at the end of my book after she reconquers her kingdom and sits on her throne with a glass ball in her hand, everything emanating light.

You were confused; I had guessed you would be. Not a lot of people in school thought like my father taught me, probably because we were in North Carolina in the early nineties, and I remember being the only Democrat to line up for the fake election at Carver Elementary. You asked me, *How can a girl have a girlfriend, Jessie?* But it wasn't that complicated, and I told you so, because my dad had explained it to me really well. He said to me a long time ago that he figured that we didn't have to date boys if we didn't want to, even though Mrs. Lancashire only ever talked about our future in terms of *when you get a husband.* My great evidence for everything has always been my father.

So you agreed, and we made it official in the way I imagine most seventh graders do—we both said out loud that we were dating and then laid back down on the trampoline's warm, taut belly with our fingers just touching. The only silly difference between before and after that moment was words, words that made me feel like I could scoop up the whole world into my small, white hands.

I've told Steve the truth up to that point, as far as I can recall. But he thinks your father got a job offer in Hawaii, which is partly true. You moved a few months later. I don't know why I can't bring myself to recite the rest of the words in this story. Perhaps because I retell it for him, and it is too much to describe the ache that never really came from losing you, but something deeper and different that I still don't have a name for. So I don't tell him why I sometimes wake up like I did the morning after that, sure that something somewhere was rupturing, that things were breaking and would keep on breaking down to their atoms.

I could tell our front door was open, the hot air slipping into the house and through my cracked bedroom door. Someone was speaking: *I don't want them playing together anymore, Rick. Are we clear?* I wish I had had Steve with me then to ask me to describe the objects on my desk or the number of dirty socks in the hamper that I could see from my side of the bed. But instead, I ripped the sheets off my damp body and snuck to the edge of the hallway, hiding behind our peeling wall as I let my lungs fill with the already acute humidity suffocating the house. Your mother, black curly hair and quick eyes, was talking to my

father at our front door, with a voice that always sounds so inevitable when I come back to it. *Your sick, lesbian daughter is not welcome near Riley.* And she left, and I never spoke with you again before your parents really did sell their house and you went with them.

I don't know how you've been able to move through this memory.

Me?

I drive through Pinehurst, like a somnambulist walking back through sleep and time, wanting inexplicably to apologize to someone, and hoping the heat of it will somehow smooth out the frays and creases. It always smells like it did on July something.

Bones and the Singing River

Taylor Barnhart

Abstract

"Bones and the Singing River" is a short piece of literary fiction dealing with grief, family, and the haunting quality of love. This story was inspired in part by my relationship with my own maternal and paternal grandparents. It's hard to watch them growing old, hard to think of the time when I won't be able to hug them, laugh with them, and hear their stories. It's also hard for the old and the young to communicate with one another. And yet, the things we really want to say, no matter our age, are often quite simple. I tend to be fascinated by ordinary people and ordinary life, and I love the way that the magical and the divine can weave their way into the seemingly mundane. From all of that came this story of a boy and his grandfather who are both lost in grief, and who find one another in that lonely place.

That summer, I stayed with Grandpa in the old white house surrounded by yellow fields, the house where I could hear the steady weeping of the river all night long.

Grandma had died on a bitter March morning. We'd all been there. I was allowed into the blue-papered bedroom to say goodbye, but I was standing just outside the door when she went. I heard her soul whisper out from her body—I guessed it went through the window. In fact, some of it had gone into her room upstairs, and some of it had gone into the garden, and some of it had gone into the river, but I didn't learn that until later on.

Grandpa hadn't been the same since she went. Mom and Dad were worried about him, living all the way over in Clayton, alone in that big house that had once been full of many voices, but most importantly, hers. They said he was tearing up the garden. They said he'd stopped taking his blood pressure medicine and that he was staying awake all night long.

So, they decided to send me over. That's how they said it. *We'll send Will over*. It would give the old man something to do, they said. Something to take care of.

I believed them, partly. But I also knew that they were running out of ideas for what to do with me. I hadn't tried out for any sports that year, and nor was I ascending into academic genius, which was the only acceptable excuse for not doing sports. I stayed in my room, mostly, reading books. That really worried them. I could see it on their faces, the way they looked at each other right across me at the supper table. After all, did reading books really count as doing *anything*?

"Sending me over" would give them some time to think about how to fix me. In the meantime, they hoped, maybe Grandpa and I would be able to fix each other. I doubted it. Grandpa was all kinds of things, but he certainly wasn't like me.

He'd worked on the farm all his life. He was retired now, and had leased out the fields to other farmers, but he was still working. He still had three chickens and a cow and a manageable garden. He had to work. He didn't know any better, anything other than to mend and build and spill his sweat into the land that depended on him. He wasn't book smart, but he was clever. He could tell how to fix anything just by looking at it. He drove fast and walked slow, taking his time. He wasn't quiet out of shyness—he just preferred it that way. When he did talk, his words were clear and strong, and he didn't mumble like I did. A hammer looked right in his hands.

I wasn't sorry to leave home, though. Maybe at Grandpa's, I thought, I would be free to run. I loved to run. Running meant being awake, really awake, right in the center of my chest. I loved the simplicity of it. How it didn't require

talking or even thinking. When I ran, my body thought for me—*curve sharp around that tree—twisted branch—jump*. The world shrank down to quickly-passing images and colors. *Blueberry bushes. Stop sign. Oak tree. Yellow car. Dog*. Running always felt good, and it always made sense.

I hadn't told my parents any of this, and I never ran when they could see me. If they found out about the running, I knew there would be all kinds of questions: *How fast can you run? Would you show us? Why don't you try out for the track team? You could go far with a gift like that, son. You could go far*.

I wanted the running to belong to me. I didn't want to show it off or give it away or take the freedom out of it. I could probably sneak away at Grandpa's. And if he was really as messed up about losing Grandma as my folks let on, he might not notice me running even if he saw me do it.

Grandma had died quietly and slowly. It almost felt like she was dying still, gently breathing in that blue bedroom, a scarecrow under masses of quilts. She had tried not to hurt us too much in her dying. She had smiled her way out of life as she had smiled all through it, easing our pain before paying her own any mind.

We had all loved her, and we had all lost her. Now, we were caught in remembering all the things she'd been to us. I remembered how she had filled that old house with singing and laughter. How she'd read to me and taught me how to make mile-high biscuits. She had held me when I cried, and she never saw me as something that needed "fixing." I still didn't quite know who I was without her, and I wasn't sure who Grandpa would be, either. I realized that she had sort of connected us, Grandpa and me. Our love for her had smoothed over how different we were from each other and made us friendly. How would we get along without her? What would we say?

❧

I could see the house, waiting beyond the last curve of the russet-colored road. Dad drove unhurriedly while dust billowed from the back tires. Already, time had lost its sense of urgency, giving in to the way of things in the country, where the wind and the trees and the slow-sprouting corn are in charge.

He wasn't waiting for us on the front porch. That's what they used to do when we'd visit. They'd be sitting on the swing together, ice clinking in their bead-speckled glasses of tea. All the grownup voices would weave over and through one another, and among them I would hear her asking me, laughing, "Boy, what took you so long?" Her voice was smooth and soft, like warm honey. Like the sound of a violin.

None of that this time. She was silent under the dirt of the cemetery on the

other side of town, and he was not on the porch.

"He'll be in the barn or in the garden," Dad said. "We'll find him. Go put your stuff upstairs."

I stood still when I got through the front door. It smelled like their house, like old wood and lemons and clean laundry. But something was wrong.

Everything was gone. Pictures, curtains, the rugs on the floor, the chiming clock on the wall. The candlesticks on the mantel above the fireplace, the shelves that had always been full of books. I moved from room to room. Her tea set, her piano, her basket of knitting things, her record player, all missing. Light streamed through the naked windows into a hollowed-out house. He'd left the couch and the TV in the living room, and one lamp. In their bedroom, the bed was covered with a dark green quilt I didn't recognize. There was white, empty space everywhere, and a silence that rang and rang.

Mom and Dad said goodbye in the driveway. I tried to say something about the house, but they were covering me with hugs and warnings to behave and be helpful and not to read too much. Grandpa was in the barn, they said, tinkering and not likely to come out for a while. I watched the car until it was out of sight, and the house breathed quietly at my back. I thought about going to find Grandpa or unpacking my stuff, but neither sounded as good as running. I started off in the opposite direction from where my parents had gone. Green and gold and sun-dried yellow flew past me, and I let thoughts of the empty house drift from my mind. I thought about Grandma. How she had soft blue eyes and could whistle better than anyone I knew. She could throw farther than me or Grandpa, and she had helped build their house. They'd built it together, two years before their wedding, with help from friends and neighbors. There had been pictures of them working on it, once. Grandma in overalls, a hammer in her hand, laughing at something Grandpa said. The album had been kept on the mantel in the living room. Nothing there now but dust.

She loved sad, old songs and taught them all to me. "Moon River." "Oh, Susanna." "Barbara Allan." She used to dance with Grandpa on the porch sometimes, and we'd all clap and tease them, and eventually we'd dance, too. I knew stories about her. How she'd lost two babies before the rest were born and buried them in the garden, under the rosebushes. How she'd helped Grandpa in the fields when it was needed and raised four children and made that house a happy place to be.

What would she think of it now? I wondered. What would she think if she could see what he'd done?

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Those first few weeks, we crept around one another and didn't do much. Grandpa didn't look too bad, especially considering he hadn't been sleeping. He didn't look thinner or paler or bone-weary like I'd thought he would. There was an edge to him that there hadn't been before. Something sharp and silvery glinted in his eyes when he looked at me, and I tried not to flinch. He wasn't right, that was for sure. Wasn't himself. He worked in the barn, picked cucumbers and tomatoes in the garden, and he fiddled around with his truck. But all the while, it seemed like he might throw something or slam his fists into the wall. It seemed like he might start yelling—at me, at everything. He didn't yell, though. He hardly said anything at all. We played checkers a couple of times, but he was only half-there through each game, and he always lost.

I could pretty well take care of myself, and luckily, I'd brought plenty of books. Books about dragons, books about wolves, books about mountain-climbing and old friends. I'd even brought one book about running, but it turned out to be far less interesting than the real thing. If I got bored, I'd check to see what Grandpa was up to, and then I'd run up and down the dirt road in front of the house until the heat was too heavy and sweat started stinging my eyes. One day, I ran through the backyard and along the back field until I got to the river. Grandma had wanted a house by the river. She was river-crazy, that was for sure. She'd walked down to the water every morning of my whole life.

"Rivers take their time," she told me, "but they get to where they're going, and they stop to dance a little on the way."

Dad and his brothers had learned to swim in that river, and so had I. Grandma said it was her favorite river in the whole world—not that she'd seen that many. She said it was *her* river, that God had made it just for her as a gift. We believed her.

The river was slow and cool and just deep enough for swimming. There were trees all around it that dipped their roots in the water. It was all sweet air and green shadows, and it was pure mercy coming out of a July afternoon.

It wasn't until I was under the water that I heard her voice.

Boy, she said, *what took you so long?*

I sputtered and choked and crawled onto the grass of the bank, and lay there blinking up at the treetops. I'd imagined it. That's all. I shook my head and jumped back in.

Wider than a mile, I'm crossin' you in style someday. Old dream maker, you heartbreaker, wherever you're goin', I'm goin' your way…

She was singing "Moon River" to me in her soft, low voice. It could have been bedtime or just one of those nights out on the porch where we'd swing and sing together. Her voice was in the river, part of it, pouring into my ears and through my chest again and again. I flew out of that water and ran for the

house as fast as I could.

Grandpa was in the garden.

"Don't get mud on the floor," was all he said to me.

I tried to stay away from the river after that. I could hear it from my bedroom, though, the sound of it slipping through the window cracks while I slept. It hummed and wept all night. In the morning, I felt like I'd been swimming, like there was water in my ears. I couldn't stop thinking about hearing her voice in the water, and the more I thought about it, the sadder I felt. I wished I had scooped up some of that water in my hands. Maybe I could have held her voice a little longer. What else might she have told me? Had she wanted to tell me other things, only I hadn't let her?

That's when I knew I had to get some of that river. I had to keep it near me and let Grandma say whatever else she had to say. I found some old glass jars in a kitchen cupboard—I didn't dare look in the barn for anything bigger. Grandpa was in there again, clattering around, when I went to hide the jars behind a tree. I chose one close to the water, tucked the jars into the dirt near the roots, and went back up to the house. That night, I slipped out the back door and down to the river's edge. The darkness was cool and damp, alive with the hum of crickets and the soft cooing of night birds. I grabbed two of the jars and walked into the water. Something slid fast over one of my feet, but I tried not to think about it. I wondered if I would hear her again, or if her voice and her singing had been nothing more than a comforting invention. Gripping the jars tight, I ducked under.

Boy.

I was thrilled, and slightly terrified. I hadn't imagined it. It was real. It was her. She was here and talking to me! Well, sort of.

Boy.

Two drifters, off to see the world, there's such a lot of world to see…

The sound of her voice was so thick in my ears that I nearly opened my mouth to sing with her. Remembering myself, I let the dark water spill into the jars.

We're after the same rainbow's end…waitin' round the bend…my huckleberry friend…

I sputtered up out of the water and brought the jars to the bank. Two more times I went into the river with empty jars. Finally, wiping water out of my eyes, head full of nothing but the singing, I screwed the last lid on tight. I made two trips back and forth to the house and I put those jars full of river under my bed. I'd thought Grandpa was in his room, (I'd prayed he was asleep), but on my second trip to the house, I saw a light under the closed barn doors. As I turned my back to the water for the last time, the river started its quiet crying

again, and I heard her, I swear I heard her tell me,
Come back to me, boy. Come back.

<p style="text-align:center">❧</p>

The next four nights, I didn't sleep. At first, there was a comfort about the river being in my room, like maybe she was close. There was something of her in the house, now, something he didn't know about, something he wouldn't even understand. I thought I'd want to hear her voice, that she'd tell me things I'd never had time to listen to when she was alive. That maybe she'd sing me to sleep. But suddenly, her voice was many voices. Well, not many voices, exactly. Just her voice, but multiplied. And louder. Singing and talking all at once. Singing "Moon River" and "Oh, Susanna" and "Barbara Allen" all at the same time, and with rising pitch, saying,

Boy, what took you so long? Waitin' round the bend. Boy, come back to me. Don't you cry for me. Boy, where on earth are you going? Boy, boy, boy.

I tried to fight it. To pretend that it was nice, and it didn't bother me. But I was tired, so tired, and the singing turned to a cacophony of blurred words and finally I couldn't take it. I took every one of those jars back to the river and poured the water out.

After that, I really did stay away from the river, even though it grew hotter by the day and sometimes all I wanted was to swim. I ran up and down the dirt road harder than ever, salt sweat stinging my eyes, trying to rattle those watery voices out of my head.

<p style="text-align:center">❧</p>

I didn't mind how quiet Grandpa was, how he didn't really talk to me or thump me on the back like he used to. It was easier, the not talking, for both of us. I'd been worried he would start in right away with telling me to stand up straight, speak up, be confident. Asking me questions about school and girls and the big plans I should be making. I'd always sort of mumbled when I talked, and I talked quietly. Other kids made fun of me for it, but I ignored what they said, and I usually stayed out of trouble. I didn't bother with fights because I knew I wouldn't win them. You have to want it in a fight. You have to want to win more than you mind getting hurt or doing the hurting. I just didn't see the point.

I wished I had enough fight in me to be brave sometimes, though. I wished I could talk to Savannah Hanes, who had red hair and freckles and was on the track team. I wished I could talk to her about running, ask her why she loved it. She was too pretty and too smart for me—I burned from the shine of her.

Still, I couldn't help wanting to walk home with her after school, taking our time through the neighborhoods, talking about anything. But whenever I tried to talk to her, I just choked and turned red and wanted to run. I had a feeling what Grandpa might say about that. All the girls had been crazy about him. Grandma had told me so. But he hadn't wanted any of those other girls—he'd just wanted her. He'd won her with kindness and quiet, steady strength. Proved his love for her again and again. Shown her he could take care of her better than anybody, and that he kept his promises.

Grandpa didn't run away from things. Things went wrong on the farm, and he fixed them or made do. Trouble came, or bad weather, and he endured. He'd helped bring animals into the world and out of it—the blood of life and the blood of killing had been on his hands. He said what needed to be said. He did what needed to be done. He wasn't like me. Once, he'd even tried to talk me out of mumbling.

"You've got every right to be heard," he said, "as much as any other man. Use your voice, or you'll lose it."

I could have told him it was easy for him to say. I could have told him he just didn't understand. I could've told him I didn't want to speak up, that I *liked* to keep quiet—most of the time, anyway. But I knew it was no use. He'd just argue, or worse, he'd look at me like I was something to be pitied, shake his head, and sigh. I just nodded at my shoes and hoped someone would change the subject.

I wish I had enough fight in me to ask him about the house. How he dared erase her from it, taking away all the things she'd loved. But I could tell by looking at him that he wouldn't let me say it. We were not going to talk about the house and that was that. He did his best not to even let me think it. Seemed like, every time I started to, he'd stare me down with war in his eyes, like an old hawk used to hunting. I'd look away, and we'd go out to wash the truck or pick blackberries.

In the quiet between us, I noticed things. The house got emptier. Any little thing of hers, anything pretty or soft that lingered in the rooms would be gone one morning when I came down for breakfast, or gone one evening when I got in from running. (He didn't seem to notice the running, and if he noticed, he didn't seem to mind.) At night, I could hear him in the backyard. I was not to go in the barn at all and I was not to go in the backyard at night. He'd told me. But I wondered what he was up to.

One night, I crept to the back of the house to watch him. I opened a window and breathed summer air. Light spilled from the barn, and he was digging in the garden. Back and forth he went, from the barn to the garden, and kept on digging. I could see the black dirt spilling up and over around his shovel. He

went on like that for a while, but then he stopped. He knelt down in the midst of the torn-up earth and started rocking back and forth, his arms wrapped around himself like he was holding his own body together. Then I heard—he was sobbing. Crying like a little boy, and in between the cries he took great, desperate gulps of air.

It is a strange thing, to watch someone you know as strong start to break into pieces. It makes the ground feel soft and shaky under your feet. I wanted to shout at him to stop. It was the sound of it—that terrible, wild, impossible sound.

I could see he was at the back of the garden by the rosebushes, close to where those babies were sleeping underground. I left him in their company, and as I moved away from the window, I itched to start running.

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There were good days. Days when we went for long drives down dirt roads. We went upriver and down. We stopped at farm stands and left with peach juice dripping down our chins. We went fishing. There had once been two poles, but when Grandpa came out to get in the truck, he was only carrying one. I didn't ask about it, and he didn't explain, just drove us to the hardware store in town and bought another one. We didn't talk while we fished.

He didn't bother me about mumbling or school or girls or any of the usual things. Sometimes, he'd ruffle my hair as he walked by or plop his old straw hat on my head. He tried to teach me juggling with tomatoes. I tried, but one by one they splatted on the ground around me. That made him laugh. One night, I woke up to find a rose on my nightstand. It was dark like blood or a blackberry, and wet with dew.

The day I went into Grandma's upstairs room, it was too hot to do anything, too hot even to read. Still, I could hear him out in the barn, clanging around. I was bored and a little lonely, so I went up to the attic. It had been the room where she did her sewing and scrapbook-making, where she'd gone to read and paint pictures in the quiet. When I'd first come to the house, I'd noticed there was nothing in that room anymore but an old dresser. I didn't know why, but I felt like there might be something in it. Something he hadn't been able to get rid of. I was sick of the gape and ache of being without her. Sick of the smothered emptiness in the house. I wanted some part of her, something I could look at and hold in my hands. Something that wouldn't haunt me with many voices or run through my fingers like water.

The dresser was cinnamon-colored and worn smooth. I ran my hand across it. It had that lemony smell, the smell of their house. I pulled open the bottom

drawer and felt a little thrill and a wrench of sorrow. The drawer was lined with flowered paper. There was a bunch of lavender tied with a ribbon. A bottle of perfume. A pearl necklace. Scrapbooks of her babies and grandbabies. Her paintbrushes. Her Bible. Some sheet music and three gold hair pins shaped like leaves. A picture of her in black and white, back when she was young and free and she knew it.

I was looking at it all and just about to open one of the scrapbooks when I heard the creak of his boots on the wood floor behind me.

He was standing in the doorway, utterly still. He was angry, I realized, angrier than I'd ever seen him. His hands were fists, and it was so quiet all I could hear was the two of us breathing. I'd never thought he could hate me, but I knew he was hating me in that moment, hating me for finding her. He was shaking. I thought maybe he would hit me. He opened and closed his mouth a couple of times, but the words wouldn't come.

I figured I would talk instead. There was only one thing to say, the thing I should have said when I first walked through the front door. I looked at him, and he was mighty and shrunken all at once. He looked more like a man than he ever had, a mountain over me, made of steel and bitter rage. But something in the set of his shoulders and the hurt behind his eyes made him look desperate, too, like he was falling through empty space.

I didn't want to hurt him, not really. But I might as well have slapped him with what I said.

"You put her away." I said it soft, like always, but I knew he heard because he stepped back fast, away from me, and his eyes were wide.

There was room now in the doorway, and I took off. I tore out of the house and down the dirt road. I felt guilty while I ran. Guilty for what I'd said and how good it had felt to say it. Guilty while my heart thrummed cleanly and the earth felt strong and sure under my feet. Guilty because I could use these heartbeats, these gulps of summer air, to let what I felt just bleed out of me. Guilty because my muscles were young and screaming to be used. I could run up and down the Earth. But he couldn't. He was stuck. His body wouldn't let him do what mine could, and, anyway, he had no place to go. What he wanted had been right there at home, and it was gone. He couldn't go far from her, so he was keeping himself busy while he waited, and while he waited, he was probably hoping she'd sprout up from the garden one morning and all of it would have been a swift and brutal dream.

I ran and ran and didn't think about where I was going until I realized I was on top of a hill. I'd never made it this far down the dirt road before. I could still see the house, but it looked faraway and lonely. I could see the whole town from where I stood, even the cemetery where Grandma was buried. I felt like I

wasn't a part of anything. I wasn't sure I minded, either. I sat down in the grass and cried for a while, ashamed and missing home.

It was dusk when I heard his grumbly old truck on the road below. I was determined not to talk to him. I didn't want to fight, and I was sorry for what I'd said. I felt tired all the way through, too tired for talking. But he just sat down beside me and didn't say anything. He smelled like the aftershave he always used, and sweat and tobacco. Summer granted us a soft breeze, the last before the still stickiness of evening would set in. I looked at him, but he wasn't looking at me. He was looking out at the fields. He didn't look angry, just sad and thoughtful and old. Things were getting apricot-tinted in the light. Time, once again, was in no hurry. I wiped my tears with my shirt and started to relax.

He reached over and put something in my hands. It was wrapped in tissue paper and it rattled a little when I moved it. I took the paper off.

It was one of her teacups, the ones that had little blue and purple flowers on them. It was a lovely thing. I turned it over in my hands while he started talking.

"I bought her that set when we first got married." he said. "She'd seen it in a window. It was one of the first things we ever got for the house. She was always so careful with it. Said it was special."

He ran his fingers through his hair and sighed.

"After she went, I started hearing things in the house. I mean, I was hearing *things*…all her things were full of her voice or something. It was like she was talking to me all the time, all the time, but she wasn't there."

He looked at me, his eyes begging me to understand, and said it again.

"She wasn't there."

I nodded. He went on.

"I started carrying stuff out to the barn, but I could hear it there, too. It was so loud, Will. One night, I got sort of frantic and started putting things in the garden. Out by the rosebushes, you know. Books, dishes, the curtains, her jewelry, her dresses, her work boots and her fishing pole. I wrapped 'em up careful. I didn't know what else to do. I couldn't get rid of it all, and I couldn't leave…I didn't know what to do."

He wiped his tears with his shirt, just like me.

"It seemed quieter once I started putting things in the garden. I could sleep a little, some nights. I just wonder if…I mean, do you think she'd mind? If she could see the house…" he shook his head and looked sick of himself.

Looking at the teacup, I realized that's all it was. Just a cup. She didn't need it anymore, where she was. And she probably didn't care a hoot about jewelry and dresses and curtains anymore, either. She was somewhere singing, and if she missed anything, I bet what she missed was us.

I put my hand on his shoulder.

I tried not to mumble when I said, "I don't guess she'd mind a bit."

I said it without being completely certain it was true. But he smiled a thankful smile at me, and I knew I'd said right. Then I remembered something. I hadn't planned on telling anyone, but I knew now that he could keep a secret pretty well.

"I heard her, too." I said. "In the river. When I went under, I heard her voice."

There was quiet between us again, but it felt different.

The sky turned from apricot to lavender and pale blue. Eventually, we started talking about other things. We talked about fishing and running and the books I was reading. He didn't tell me not to mumble, and he didn't act like I was something to be pitied. He listened and nodded and, when I told him about choking every time I saw Savannah Hanes, he laughed. We talked about what we could do for the rest of the summer. He said he might teach me to whittle. I said that would be alright.

Things got better as that long, slow summer wore on. He was still all kinds of things and not like me. I still didn't know if a hammer would ever look right in my hands. But we didn't feel like we had to put miles of room between us when we walked past each other. We weren't tiptoeing around our secrets. We moved some of her things back into the house, but some stayed under the rosebushes, close to the bones of those lost babies. He did teach me to whittle, and the first thing I made was a pinewood sign with her name carved into it: *Etta Jean Monroe.* I gave it to him, and he put it on top of the dresser in her room upstairs.

We swam in the river and were not afraid of her voice anymore. We stood on the top of that hill that looked over everything and hollered her name together—we figured she could hear us. We sat still in the golden evening light, while things rotted under us and bloomed above.

Bros Before Superheroes: The Male and Homoerotic Gaze in the Marvel Cinematic Universe

Maria Meluso

Abstract

Blockbuster films have become as much a staple in contemporary popular culture as classic cinema once was, but that popularity has left it open to the same issues as classic cinema. Filmmakers still tend to be overwhelmingly male, and though the moviegoing public is as diverse as the world itself, representation of women and LGBTQ+ individuals continues to lag in Hollywood. Despite attempts to evolve with the current political climate, films in the Marvel Cinematic Universe perpetuate both the male and homoerotic gazes, reinforcing the status quo of established Victorian-era gender roles and sexual expectations under the guise of progressive subversion. I studied several of the films in the Marvel franchise for their representations of women, both in story and in cinematography, and their representations of male-to-male relationships. Though Marvel has prided itself on telling compelling and universally relatable stories, they have failed to master representing women as more than objects and accessories to motivate their male heroes and representing male relationships with more nuance and realism and less implicit homophobia. Interrogating gender and sexuality representations in the stories our country and culture popularize can help us better understand how Victorian-era gender roles and sexual expectations continue to be reinforced today.

INTRODUCTION

The nerds have won the culture war, and in their wake, they have left a glut of fandom and films that will forever characterize the late 2000s and 2010s as the rise and proliferation of the comic book subgenre of films. The Marvel Cinematic Universe (MCU), Marvel comic book company's 10-year film adaptation project that brought together beloved comic book heroes in thrilling action epics and created each film to serve as marketing for the next releases, has become a cultural phenomenon and the bona fide benchmark for film franchising. Through this project, Marvel went from beloved children's graphic novels thought to mostly appeal to young boys to a household name and the biggest thing in blockbuster cinema arguably since George Lucas coined the summer blockbuster with Star Wars. Marvel's cultural resonance will provide vast material for study and scrutiny for years to come.

However, with such a vast cultural impact, the MCU is not without problems. It is well known that, particularly in print, comic book heroines tend to be scantily clad women in suggestive, if not anatomically impossible, poses. In films, there are unfortunately similar problems with Marvel's characters, particularly their heroines: they are frequently subjected to what Laura Mulvey characterizes as the "male gaze." Though Marvel has tried to vary their cinematic superhero roster in recent years, including releasing their first female-led solo film, they still frequently sideline their female heroes. At the same time, many of their films portray masculinity in a limited, eroticized way, often alienating and further marginalizing members of the LGBTQ+ community who do not fit the binary. Despite attempts to evolve with the current cultural climate, films in the Marvel Cinematic Universe fall victim to both the male and homoerotic gazes, reinforcing the status quo of Victorian-era gender roles and sexual expectations under the guise of progressive subversion of audience expectation.

JOHN RUSKIN AND THE ANGEL IN THE HOUSE

Historians consider the period in the seventeenth century between 1837 and 1901 the Victorian period, so named after Britain's Queen Victoria. The period is characterized by a wealth of influential literature and the rise of the novel as a form of entertainment, the proliferation of heavy industry in the Industrial Revolutions that took place in both America and the British Empire, and the centrality of family and faith to the social structure. Due in part to the fear of exploitation of factory workers and merchants, and the renewed emphasis on faith and the nuclear family, sexuality and gender roles required strict societal control.

Despite the stereotypical association of the Victorian period with repressed sexuality, much writing exists from that time regarding proper sexuality and gender roles. While the ideas of decency and manners prevented the average person from speaking freely about sex and sexuality, Michel Foucault explains:

> *But more important was the multiplication of discourses concerning sex in the field of exercise of power itself: an institutional incitement to speak about it, and to do so more and more; a determination on the part of the agencies of power to hear it spoken about, and to cause it to speak through explicit articulation and endlessly accumulated detail. (Foucault 18).*

Foucault suggested that, despite censorship, prohibition of, and misapprehension about sex and sexuality existing from the classical era, the Victorian period marks a notable attitudinal shift. He suggests this is due in some part to the rise of capitalism and heavy industry in the West, as business owners needed intensive labor and increased labor capacity in search of profit. Pleasure and leisure were not productive and so needed to be controlled (Foucault 6). There was also a religious factor that reinforced expressions of sex and sexuality as transgressive and "sinful." Foucault recognized this systematic repression of sex, what he called the "regime of power-knowledge-pleasure," as continuing in his modern world (11). Arguably, this same trend persists to the contemporary age.

Many of the gender roles Americans and, to a larger extent, Westerners take for granted have root in the controlling nature of writings about sexuality in the Victorian era. A purity doctrine remains part of American culture, intrinsically tied to Christianity. Despite the sexual revolution and liberation movement in the 1960s, sex is still treated as taboo in much of the United States. Education about sex and gender in America is lacking, and, as the curriculum is left largely up to districts and local governments, two students from the same general area may have two wildly different experiences with sexual education.

When students grow up, they also tend to embody traditional gender roles. Popular sentiment remains that women and men occupy separate spheres of influence; as John Ruskin asserted in his essay, "Of Queens' Gardens," men are dominant, occupying the sphere outside the home, making war and violence and performing the action, and women are docile, domestic, homemakers, and serve the men as inspiration, "the mirror of beauty," the nonviolent, "centre of order" angels, and the "balm of distress" amid the chaos (91). Ruskin coined the term "angel in the house" to describe the ideal of the good Victorian woman meant to soothe and serve her husband and family, and popularized

the idea of the Fallen Woman as one who embraced her sexuality and rejected her role in the home. While research indicates there has been a rise in stay-at-home fathers (17 percent of all stay-at-home parents in 2016), stay-at-home motherhood is also up from previous years (Livingston). In fact, three-fourths of all stay-at-home moms say their sole purpose in choosing to stay at home is to care for family, compared to one-fourth of stay-at-home fathers (Livingston). Though it is true many gender roles and attitudes about sexuality have loosened or shifted, many of the same beliefs from the Victorian period persist.

One of the ways traditional gender roles are perpetuated comes from media enculturation, the process by which people are socialized into and educated about their culture through that culture's mass media. Some scholars and theorists believe exposure to ideas in media can directly impact a person's view of self and their place in the culture to which they belong. Laura Mulvey adopted this idea as a means of critiquing narrative cinema and the portrayal of women in visual entertainment media.

Introduction to the Male and Homoerotic Gaze

In her groundbreaking essay entitled, "Visual Pleasure and Narrative Cinema," Laura Mulvey uses psychoanalytical literary theory to describe the limited options for female characters in classic Hollywood. According to Mulvey, "The determining male gaze projects its fantasy onto the female figure, which is styled accordingly. In their traditional exhibitionist role women are simultaneously looked at and displayed, with their appearance coded for strong visual and erotic impact…" (Mulvey 436). This, she argues, contrasts sharply with the active male (often protagonist) as the one who looks and drives the narrative of the story. It also translates to the audience; Mulvey argues that women onscreen are objectified by both the men onscreen and in the audience and are compelled to participate in their own objectification (436). Though her argument particularly hinges on the films of two directors, Alfred Hitchcock and Josef von Sternberg, she criticizes all of classic narrative cinema from the Golden Age of Hollywood as voyeuristic and patriarchal. This argument is evergreen, however, and can apply even today despite Hollywood's attempts at progressivism and diversity inclusion.

The gaze works on several levels. First, it treats the man as the looker and the woman as bearer of the look, both for the characters onscreen and the spectators in the theater (Mulvey 438). Second, it tends to be replicated through camera angles and editing, as the way the camera moves often simulates the way men might look a particularly attractive woman up and down and hover or pause on her particularly erogenous zones . In doing this, it may fragment

the body using close-up of legs, buttocks, breasts, or faces to further remove the female character from personhood and cement her solely as an object for consumption (Mulvey 437). Finally, the gaze translates through action and role within the film. Women historically have had little to do with advancing the plot of a narrative film, as the men are the active heroes and the women are traditionally viewed as objects. Mulvey quotes Budd Boetticher, saying,

> *What counts is what the heroine provokes, or rather what she represents. She is the one, or rather the love or fear she inspires in the hero, or else the concern he feels for her, who makes him act the way he does. In herself the woman has not the slightest importance.* (qtd. in Mulvey 436)

Female characters are motivators for the male characters, but tend to lack autonomy or impact beyond what they do for the men. These things, Mulvey argues, reinforce gendered stereotypes about the roles and spheres for men and women, even inadvertently.

Mulvey's discussion particularly focuses on classic narrative cinema, but it has been applied to contemporary cinema and co-opted to discuss the various ways cinema represents reality. A more recent example of the male gaze as it appears in Mulvey's argument is in the films of Stanley Kubrick, one of the most celebrated auteurs of filmmaking. Sabine Planka calls this out in an analysis of several of Kubrick's female characters, asserting that they are almost invariably sexualized, silenced, or stripped of any sort of voice, and murdered, often violently (53). This illustrates Mulvey's main point that women hold no value aside from how they look and how they can be punished. Planka says, "What emerges is that women increasingly become objects - and above all objects of violence - in the course of Kubrick's films, until they merge with these objects and become deadly weapons, machines, always available and willing to serve men" (63). This is unfortunately also the fate of many of Marvel's women, as well as the fate of many female characters in some of the most contemporary and beloved films. Though there has been a more progressive shift toward equitable representation in recent years, Kubrick is still hailed as an exceptional filmmaker, and many of his techniques for portraying female characters have been co-opted by other directors.

Mulvey's argument has created controversy, especially regarding her dismissal of films with female protagonists and assertion that, due to the current heterosexual power structures underscoring this phenomenon, "the male figure cannot bear the burden of sexual objectification" (Mulvey 437). There are some who disagree with Mulvey, suggesting that female protagonists can be portrayed independent of the gaze and with strength that is real, not simply

apparent. There are also arguments that, especially in the "chick flick" subgenre, the gaze often and overwhelmingly skews female, with camera angles and editing clearly eroticizing the male form (Cohen)—though, arguably, the male is often still the pursuer in most of these romantic scenarios.

One alternative theory is proposed by Patrick Schuckmann in his article, "Masculinity, the Male Spectator and the Homoerotic Gaze." He suggests that masculinity is also eroticized, particularly in American action film of the 1980s and 90s, and that it further stigmatizes LGBTQ+ desire by stereotyping and defining masculinity, evoking homoeroticism, and simultaneously disavowing it (677). By "disavow," Schuckmann discusses the frequent absence of any true male-to-male bonding in action films and, if there is some aspect of that bonding present, it is countered by shoehorning in misused female characters as love interests. The homoerotic gaze also relates to the male gaze, as there often must be a female character who is subjugated or serves as a metaphorical prize or trophy for the male action hero. Like the voyeuristic and fetishistic side of the gaze Mulvey discusses, these female characters operating under the homoerotic gaze serve no purpose outside of being "icons," alluring sexual objects on display for the pleasures of men (Mulvey 438). Unfortunately, many of Marvel's earlier female characters often are nothing but trophies for the hyper-masculine heroes, even the ones who appear at a surface level to have some strength and autonomy (such as Pepper Potts, Scarlet Witch, Jane Foster, and Black Widow). Just as the male gaze reinforces the heterosexual and patriarchal power structure, so too does its cousin, Schuckmann's homoerotic gaze. Though filmmakers seem more aware of these tropes, the majority of Hollywood unfortunately continues playing into them, impressing a status quo upon even the youngest viewers.

Contemporary MCU Films and the Male and Homoerotic Gaze

Using the concepts of the male and homoerotic gaze, the MCU can face critique. These films belong to the Disney company and adapt properties created for primarily young male audiences. While the films are accessible to people of all ages and backgrounds (somewhat like the Western) and have found favor with a growing number of female fans, the fact remains that this franchise has power to impact the values and beliefs of current and future generations. Despite Marvel's recent progressive push to represent diverse ethnicities, socioeconomic statuses, races, and genders, the films unfortunately still relegate women to limited roles (as in *Avengers: Infinity War, Iron Man, and Guardians of the Galaxy Volumes I and II*); use women as motivators for the male heroes and inspiration for worry, fear, love, and emotional pain (as in *Avengers: Infinity War*

and *Iron Man 2* and *3*); and eroticize the male form while disavowing homo-erotic and homosexual desire by wedging in potential heterosexual romances where they were not required, (as in *Avengers: Age of Ultron* and *Captain America: The Winter Soldier*). I will also discuss potential reasons for this staunch adherence to Victorian-era gender roles and sexual expectations, as well as signs for what may still lie ahead for the MCU.

For the purpose of this paper, *Captain Marvel* (2019), an outlier and a recent attempt to shift Marvel's typical paradigm, will not be explored. However, it is important to note that Marvel only released *Captain Marvel* almost two years after the success of competitor DC Comics' *Wonder Woman* (2017), once they were certain a female-led superhero movie would sell at the box office. Evidence for this reasoning is speculative, but the fact remains that Marvel had access to Black Widow and knew fans were clamoring for a solo film starring femme-fatale Natasha Romanoff since her introduction as a side character in *Iron Man 2* (2010). *Captain Marvel* also opened to mixed reviews and lukewarm reception, partially due to abhorrence of identity politics, partially due to issues with lead actress Brie Larson, and partially due to writing and story concerns. Despite this, it could be a sign creators and executives at Marvel have the capacity and desire to change course, though that remains to be seen.

Sexual Objectification of Women in the MCU

The first marker of the male gaze is the sexual objectification of women by way of relegation to limited roles—bearers of the look. It is, as Planka describes, "the voyeuristic gaze of the viewer which reduces the female body to its status as object and takes pleasure in its aesthetically portrayed physicality. But it is also the gaze of the director himself, portraying women as objects, using the camera to draw attention to them, and capturing them on film with the camera lens" (63). Four Marvel movies exemplify this: *Avengers: Infinity War, Iron Man,* and *Guardians of the Galaxy Volumes I and II.*

In *Infinity War*, though the camera work does not fragment the female characters, position them so they are on display, or linger on them, the female heroes are all clad in skin-tight costumes, filmed in power poses, and do little, if anything, to advance the plot. They play some role in the fight against Thanos, the villain, certainly, but they do not affect the plot on their own the way some male characters (notably, Starlord, Thor, Captain America, and Dr. Strange) do. In *Iron Man*, the first film in what eventually became the MCU, we first see Tony's assistant, Pepper, as almost a glorified accessory, doing his bidding, cleaning up after him, and taking care of him. She is frequently framed by lab equipment, doors, or large windows as though she is on display, and edited

with multiple closeups fragmenting her body and face. Though she is clearly important to Tony, she is never shown as more than a rigid assistant during the course of the films and is treated as Tony's eventual prize at the end of *Iron Man 2* in a "hero gets the girl" moment of fanfare on a rooftop surrounded by burning city.

Later in the MCU, in the first *Guardians of the Galaxy* film, Gamora, the only major female character, does make choices and take action to advance the plot, but she is also fragmented by camera angles (especially with shots of her legs and body) and is ogled and punished by fellow prisoners. She also serves as the obvious heterosexual love interest for Starlord, despite the presence of numerous other, arguably less attractive men in his company. In the sequel, Gamora, and newcomer Mantis, have almost no presence beyond their blossoming heterosexual relationships. In fact, Gamora is so tangential to the plot of *Guardians of the Galaxy Volume II*, and so defined by her relationship to Starlord, she may as well not be there at all. Mantis, though she has an empathetic power, has little to do with the overall story. Mantis' ability to empathize is used as a joke in one particular scene, where she reveals that Starlord has "romantic, sexual love" for Gamora, at which she and Drax share a laugh. She is often depicted in closeups, and the camera particularly lingers on her hands and face. While her abilities allow her to subdue Ego temporarily to buy the heroes some time, she is treated as merely an accessory for Ego and Drax the majority of the film. These women are framed and written in such a way as to have no value in themselves and do not play much, if any, of a role in driving the film's events.

Female Character as Inspiration for Male Action in the MCU

The second marker of the male gaze is Boetticher's definition of the female character as inspiration for the actions of the male hero, usually based on love, fear, or worry (the damsel in distress). This could also be considered the woman as victim in contrast to the woman as superhuman and above traits and behaviors traditionally coded feminine (Pennell and Behm-Morawitz 220). This tends to be a feature of nearly all Marvel movies, but most clearly plays a role in *Avengers: Infinity War* and both *Iron Man* sequels. In *Infinity War*, Gamora bears the primary burden of this facet of the male gaze. Starlord's love and concern for her causes him emotional pain, which in turn leads him to act rashly in a moment of weakness and unwittingly sabotage his friends by ignoring the plan to defeat Thanos—the only one that was working—and try to attack the mad titan himself. His decision thwarts the team's effort and ultimately leads to

Thanos' victory at the end of the film. For that matter, Thanos' feelings toward Gamora, his favorite child, as her adoptive father, paradoxically inspire him to use her as a literal human sacrifice for what he perceives as the greater good, and he hurls her off a cliff to obtain the soul stone, furthering her position as no more than object and motivator. Wanda Maximoff, Scarlet Witch, who is one of the strongest, most powerful, and most dangerous Avengers, is placed in immediate peril by other children of Thanos, and her life is used as a bargaining chip to force Vision, a cyborg powered by one of the Infinity Stones, to give up the Mind Stone. In fact, Vision's love and concern for Wanda lead to most of his decisions in the film, while Wanda herself does very little to advance the plot despite her immense powers. These women, despite often being considered strong female characters, are not valued in themselves, and are valuable instead for what they cause the heroes to feel and do; these male feelings and decisions end up moving the plot forward, not the female characters who cause them.

Eroticization of Male Physique and Homoerotic Disavowal in the MCU

The marker for the homoerotic gaze, according to Schuckmann, is the eroticization of the male form, and the simultaneous evoking and disavowal of homoerotic desire and homosexuality. The eroticization of the male body and masculinity is fairly obvious in every film in the MCU, with the exceptions of *Spiderman: Homecoming* and *Ant Man* which feature slender, still conventionally attractive, but not burly, men. Almost every male body, from Tony Stark to Captain America to Thor to even Vision, is well-sculpted and athletic, often on display for the audience. Nearly every male hero appears shirtless at least once in their solo films, exhibiting the ideal muscular form and reinforcing the way men ought to look. This could cause dysmorphia in men, as watching this perceived mirror to reality as Mulvey describes, they see what they are expected to be and how they ought to look. Moreover, what Cohen says of the romantic comedy holds true here: "Here, women gaze as women, disconnected from a conventional male economy of desire, whether or not a man made the film or a patriarchal perspective informs it" (80). As women are also capable of sexual desire, this eroticization of men allow them to gaze voyeuristically upon a fantasy the same way classic cinema allowed men to. However, this also ends up reinforcing heteronormativity.

The male heroes in the MCU also all indiscriminately find themselves in physical fights or engaging in feats of strength, often employing martial arts tactics or hand-to-hand combat, and nearly always winning. While skill, agil-

ity, and cleverness are valued, as with Peter Parker (Spiderman), Tony Stark, and T'Challa (Black Panther), the movies are action films at the core and thus tend to focus on physical violence and fighting. This, historically, is a trait associated with masculinity and in particular was posited by many Victorian writers to arise when men stayed too long and too exclusively in the company of other men without reprieve provided by their "angel in the house" (as in *The Curious Case of Dr. Jekyll and Mr. Hyde* and *The Picture of Dorian Gray*). In this case, the gaze is also unkind to the average man and creates an unreasonable expectation for male physique and behavior that is now often equated to toxic masculinity. Yet, these films showcase it, represent it, and celebrate it.

The next part of Schuckmann's argument is perhaps more interesting, regarding almost codified masculine heterosexuality in action movies despite the frequent presence of two male characters in constant contact. *Avengers: Age of Ultron* is a major culprit of this, particularly regarding the abrupt relationship between Bruce Banner (The Hulk) and Natasha Romanoff (Black Widow). It is made clear from the start of the film that Natasha is inexplicably the only one who can control the Hulk using a soft, seductive, bedroom-style voice and physical touching of uncovered hands, which has since the Victorian era been considered sexual. Natasha acts as Bruce's "angel in the house," bringing him back into himself after he is taken over by the violence of the Hulk and general warfare of the team's job as heroes. This heterosexual romance is clearly one-sided at first, with Natasha more insistent on the idea of a relationship than Bruce. During a particularly intense moment, despite Bruce not bonding much with the male members of the team in any previous film, he bonds with Natasha over the way they both see themselves as monsters—Natasha because she underwent forced sterilization as part of her training and cannot be a mother. Not only does this normalize violence against women, a trope that has been so overdone even traditional comic books have begun calling it out (Curtis and Cardo 387), but it also implies Natasha's only worth comes from her femininity and what she can do in a heterosexual partnership. As Natasha was poised to be the love interest instead for fellow assassin Clint Barton (Hawkeye), the filmmakers also managed to include a separate, heterosexual domestic life for him, showing the audience his wife and children for the first time despite never mentioning them before. Finally, in a party scene with all the Avengers earlier in the film, the men discuss their current heterosexual romances, where the audience is reminded of Thor's female love interest, Jane, and Tony's relationship with Pepper. Both men then engage in a bragging match about the wonderful things their female companions do, competing to see who has the better significant other. This does not come up again, and later, in *Captain America: Civil War*, it is revealed that both couples have broken up. One has to wonder, then,

why it was included in *Age of Ultron* at all, if not to infiltrate on a moment of potential male bonding and remind viewers that all the men present are masculine and purely heterosexual.

It is perhaps even more egregious then that Natasha is also shoehorned in as a potential love interest in *Captain America: The Winter Soldier*. Steve Rogers (Captain America) clearly feels toward his best friend, Bucky Barnes (the Winter Soldier), and this clouds his judgement as to what is right and wrong, affecting the rest of the series. Yet, despite this, and despite portraying Steve spending a good portion of the film with his male friend Sam Wilson (Falcon), the writers attempt to force Black Widow into the middle by teasing her as another potential love interest. They also needlessly remind us of Captain America's heterosexual love for Peggy Carter with a brief scene in the film of him visiting her bedside, and later have Steve and Natasha kiss gratuitously at a shopping mall to avoid detection by the antagonists. The one redeeming factor here is Steve's conversation with Sam toward the beginning of the movie, where the two are allowed to bond and share the connection of being veterans. However, this never goes any further, even though Sam, like James Rhodes in the *Iron Man* films, never appears to have a love interest. In later films, it even almost seems like he subtextually vies with others, especially Bucky, for Captain America's attention and affection.

While it can be argued that the relationship between Steve and Bucky serves as the relatable, emotional heart of the *Captain America* series and, to a greater extent, the MCU, the ten-year arc of the MCU as fans know it ends in Avengers: Endgame on a reaffirmation of Steve's heterosexuality with a scene of him dancing with Peggy Carter, back in a time prior to women's sexual liberation. For films so dominated by male characters, it seems odd that so few share any deeper connections than tenuous friendship, allyship, or outright rivalry. The superheroes in these films are meant to be a team, and surely heterosexuality is not the default for all of them as the films might have audiences believe. Clearly, then, despite the frequent eroticization of the male form that could appeal to both women and homosexual men, this trend of enforced heterosexuality and shoehorning heterosexual romantic subplots can be seen as a way to disavow homosexuality and contribute to the MCU's adherence to Schuckmann's idea of the homoerotic gaze.

Moving Toward a More Diverse and Egalitarian Portrayal in the MCU

Marvel films made in the last five years, such as *Black Panther* (2018), and *Thor: Ragnarok* (2017), include more egalitarian character portrayals. There is

some truth to that. However, these films still contain elements of the patriarchal, heterosexual power structures. In *Black Panther*, though T'Challa bonds on an emotional level with the female characters in his life, he does not really bond with the male characters, even his father T'Chaka and uncle Zuri, both of whom he admires and respects. He is still eroticized in the Challenge Day scenes and his fights in and out of the suit with Killmonger. He also has a heterosexual love interest, Linda, who, though somewhat active and strong, has little effect on narrative events and is often beholden to the will and actions of the protagonist. The female characters Nakia, Okoye, and Shuri, are not overtly sexualized, but they still feed into patriarchal power structures: they act and even sometimes declare themselves subservient to the male kings of Wakanda, must seek help from the male leader of another Wakandan tribe and American Agent Ross, and two out of three of them are in heterosexual relationships. The one who is not, Shuri, is desexualized to the point that it may be even more problematic: black women have been historically marginalized, and their sexuality has been either entirely erased, as with Christophine in *Wide Sargasso Sea*, or overstated to the point they are considered lewd, lascivious, vulgar, criminal, or diseased, but no more than a sexual object or symbol, like Amelie in *Wide Sargasso Sea* (Braxton and Melancon 3). For this reason, *Black Panther* has gaze issues even beyond the male and homoerotic, including some Western or colonial gaze conventions that reinforce race as well as gender and sexuality stereotypes. This is an area for further research and discussion.

In *Thor: Ragnarok*, Hela and Valkyrie both have a fair amount of power over the male protagonists and drive some of the action in the film, and Thor bonds emotionally with his brother Loki and, in some ways, with both Bruce Banner and the Hulk. However, this bonding is underscored by the presence of Valkyrie as a potential heterosexual love interest for Thor and the multiple reminders of Natasha and Bruce's relationship from *Age of Ultron*. There are also several occasions where true potential bonding between Thor and Banner are played instead for laughs, such as Banner declaring to Thor, "You're just using me to get to the Hulk," and Thor forcing himself to act like he prefers Banner to the Hulk, or Banner tugging at his crotch and complaining of how tightly Tony wears his pants. Unfortunately, no Marvel movie is fully free of the male or homoerotic gaze, even those that appear to be.

Some of these portrayals and the avoidance of overtly homosexual characters could be due to the influence of foreign markets. American media and entertainment has become a massive point of interest in much of the world, particularly in China. While the *Star Wars* franchise and other massive Hollywood phenoms have not taken root in China, Marvel's film franchise has (Davis). It is estimated the Chinese market accounts for around 12 percent of

the total global gross for all 22 films combined (Davis). In addition, Marvel now belongs to the Disney Corporation, which touts itself as creating family-friendly entertainment. It stands to reason, then, that Marvel films would be beholden at least somewhat to the conventions that sell in foreign markets. They may be particularly affected by the Chinese government regulations and strict censorship laws, which could contribute to the depiction of rigidly defined gender roles and seemingly obligate heterosexuality. However, given that market is a small percentage of global gross for all 22 films, the more likely reason is Marvel's attachment to the Disney brand. While Disney itself seems to strategically aim for a more progressive atmosphere, they have shown they very rarely stray from the norm and only make large progressive strides when it is clear the market will favor those progressive decisions (e.g., the brief glimpse of potential homosexuality in the 2017 remake of *Beauty and the Beast*, the allegory for contemporary race relations in 2016's *Zootopia* after a multitude of high-profile incidents, or the lack of a love interest for Elsa in 2013's *Frozen* and its 2019 sequel). While Disney does affect the childhoods of many people, and while they are almost always associated with good feelings, the truth is they are a corporation and thus looking to make money first. They focus on what sells to the greatest number of people and follow that. As society evolves, and people continue to pressure Disney to make progressive creative choices in film, this trend could change in the future, and a more equitable depiction of genders, races, and sexualities could result.

This will not be without backlash however, as has already been seen in the world of comic books. In fact, a major part of the reason these films may continue to enforce gender roles is because there are so many fans unwilling to deal with change or what they perceive as a progressive agenda infiltrating their preferred media. In the comic book industry that preceded the MCU, the trend of casting more female heroines or allowing women to take on the mantle of famous Marvel characters, as well as creating a more inclusive comic book space for other races and ethnicities, has grown over the past few years. This includes the reimagining of Captain America as a black man, Carol Danvers' (Captain Marvel's) protégé Kamala Khan, a Pakistani-American girl, Afro-Latino Miles Morales as Spiderman (seen in the 2018 film *Spiderman: Into the Spider-Verse*), and an African American teenage girl named Riri Williams as Ironheart, a new character and successor to Iron Man (Slocum; Curtis and Cardo 381). With such a massive shift, it would make sense that the films will soon see something similar. After all, *Spiderman: Into the Spider-Verse* was a massive hit with fans and critics alike, grossing $375.5 million worldwide and earning the Academy Award for Best Animated Feature that year (Mendelson). The same was true of *Logan*, a gritty X-Men tale that sets up a young Latina mutant named Laura to

eventually take over for Wolverine. Trends like these may indicate an incoming change in the industry and an avenue for future research.

A separate roadblock to more equitable depiction of sex and gender comes from the fans themselves. The world of comic book fandom has never been particularly kind to perceived outsiders, especially women and people of color. However, with the rise of popular film based on these comic book properties, the aggression toward any glimmer of progressivism or change has grown exponentially. For example, the comic book group and website Bounding Into Comics is well known for their backlash against recent liberal and feminist trends in the superhero genre, both in these more egalitarian comic book portrayals and in the blockbuster films. While the articles are benign, if not obviously biased against progressivism and diversity, their fans' pervasive, hateful rhetoric about the roles of women and minorities in society and the way these roles ought to be portrayed in media got them banned from Facebook, and has caused them to complain quite vocally on their site about "liberal censorship." In another example, a few Marvel fans displeased with the actress Brie Larson and the hints of potential LGBTQ+ inclusion in *Avengers: Endgame* and future projects re-cut the film in a way that "strips most of the women from the film, and removes what the uploader refers to as the "gay shit" from the movie" (Tyeson). This, despite the already weak role of women in the film and the patronizing and nonsensical "girl power" scene with all the female characters during the final fight. This re-cut version, allegedly available on torrent sites, cuts half the film's runtime and shows that potential changes to the typical masculine narrative, or recent attempts by Marvel to correct instances of the male and homoerotic gazes, will be met with backlash from those staunchly opposed to feminism or LGBTQ+ or racial inclusivity. This could be another part of the reason Marvel has been so slow to change.

The impact of all this is a far-reaching and pervasive reinforcement of the status quo based in Victorian ideas about gender and sexuality that persist. Researchers Hillary Pennell and Elizabeth Behm-Morawitz conducted a study of female college undergraduates in the United States regarding how superhero films shaped their beliefs about body image, gender roles, and self-esteem. They cite multiple studies explaining, "Research suggests (all studies referenced in this article are based on U.S. samples unless otherwise noted) that cultural messages about gender within popular media can become normative and influence real-world perceptions. Media effects research provides evidence that entertainment media messages impact individuals' stereotypical gender role beliefs and expectations" (212). With this in mind, they surveyed students about their short-term gender perceptions after exposure to superhero films. They tested for two specific female archetypes in these films: the sexualized female as

victim (damsel in distress), and the sexualized hero (218). They discovered that exposure to the damsel in distress trope in superhero films resulted in significantly "less egalitarian beliefs about women's roles in society in comparison to the control condition" (220). It is worth noting, however, that they found no significant difference when the female students were exposed to the sexualized female superhero from the control condition. Still, this suggests that there is an effect, particularly in film, when women are portrayed as less than empowered, even when they might be considered strong female characters. This could translate to the way women are portrayed through the male gaze, and the way heterosexuality is portrayed as the norm and hints of homosexuality played for laughs in these films. If what people see onscreen affects them, then it is worth consciously recognizing when a billion-dollar, popular film franchise marketed toward families and individuals at all ages fails to address issues of gendered character portrayals and stereotyping. This inevitably feeds into perceptions about gender and sexuality and reinforces outdated ideals that have existed from the mid-1800s.

Conclusion

Despite a recent push for a more egalitarian portrayal of women and minorities, films in the Marvel Cinematic Universe still frequently perpetuate the same aspects of the male gaze and homoerotic gaze that classic cinema and '80s and '90s action films did, thus reinforcing gender ideals that arose in the Victorian period. Mulvey's discussion of the male gaze in classic cinema provides the basis for understanding the ways traditional depictions of women in film can emphasize and reinforce harmful stereotypes. This has been seen not only in classic cinema, but also in contemporary superhero films. Taking Mulvey's idea one step further, Patrick Schuckmann also posits the homoerotic gaze for action movies, where filmmakers eroticize the male form and focus on two or more male characters in close contact while simultaneously disavowing any hints of potential homosexuality. With these two versions of the gaze in mind, films in the MCU can face scrutiny. Unfortunately, many of the women of Marvel find themselves objectified as icons or accessories to the men, inspiration for male action (as Ruskin's angel in the house suggests), and often victimized. In addition, many of the men laugh off instances of genuine male bonding, often punctuating those moments with quips, and find themselves reminded of, or reminding each other of, heterosexual love interests where such references are unnecessary to the plot. While some of Marvel's more recent films avoid these pitfalls on some level, they still fall into other aspects of the male and homoerotic gazes, however unwittingly. This could be due to foreign

market influence or the nature of the Disney company as family-friendly, fairly conservative entertainment, but could also be in part due to the backlash from fans of traditional comic books as they turn to more egalitarian portrayals of historically marginalized groups. Regardless of reason, historical and stereotypical views about gender and sexuality persist, both in media and in society itself. It is important for audiences to consciously consume media and to recognize flaws with even the best and most popular works, as these are the ones that can and do shape societal perceptions. More research is needed to determine the underlying causes and overt effects of the portrayals of women and historically marginalized groups in superhero films.

The MCU has immense power to use fantasy to shape reality, and as the films feature dynamic characters with emotional and relatable arcs that say something of the human condition, understandable intentions and motivations, and believable development, so should their female characters and LGBTQ+ characters feel dynamic to break away from Victorian-era ideas, and turn to a more diverse portrayal of human sexual and gender identity.

Editorial Note

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Works Cited

Braxton, Joanne M., and Trimiko Melancon. *Black Female Sexualities*. Rutgers University Press, 2015. eBook Academic Collection (EBSCOhost),search.ebscohost.com/login.aspx?direct=true&db=e000xna&AN=966140&site=ehost-live&scope=site.

Cohen, Paula Marantz. "What Have Clothes Got to Do with It?: Romantic Comedy and the Female Gaze." *Southwest Review*, vol. 95, no. 1/2, Jan. 2010, p. 78. MasterFILE Premier, search.ebscohost.com.proxy.missouristate.edu/login.aspx?direct=true&db=f5h&AN=55576778&site=ehost-live&scope=site.

Curtis, Neal, and Valentina Cardo. "Superheroes and Third-Wave Feminism." *Feminist Media Studies*, vol. 18, no. 3, June 2018, pp. 381–396. Academic Search Complete, doi:10.1080/14680777.2017.1351387.

Davis, Rebecca. "How the Avengers Became Such a Marvel in China." *Variety*, 25 April 2019. variety.com/2019/film/news/avengers-endgame-marvel-universe-china-box-office-1203197686/. Accessed 1 May 2019.

Foucault, Michel. *The History of Sexuality*. Paris, Editions Gallimard, 1976.

Livingston, Gretchen. "Stay-at-home moms and dads account for about one-in-five U.S. Parents." *Pew Research Center*. 24 September 2018. https://www.pewresearch.org/fact-tank/2018/09/24/stay-at-home-moms-and-dads-account-for-about-one-in-five-u-s-parents/.

Mendelson, Scott. "Box Office: 'Spider-Man: Into The Spider-Verse' Proves (Yet Again) That Diversity Sells." *Forbes*. 16 December 2018. https://www.forbes.com/sites/scottmendelson/2018/12/16/box-office-spider-man-spider-verse-miles-morales-shameik-moore-hailee-steinfeld-jake-johnson-venom/#1fed4e74f5a5.

Mulvey, Laura. "Visual Pleasure and Narrative Cinema." In *Feminisms: An Anthology of Literary Theory and Criticism.* Ed. Robyn R. Warhol and Diane Price Herndl. New Brunswick: Rutgers UP, 1991.

Pennell, Hillary, and Elizabeth Behm-Morawitz. "The Empowering (Super) Heroine? The Effects of Sexualized Female Characters in Superhero Films on Women." *Sex Roles*, vol. 72, no. 5–6, Mar. 2015, pp. 211–220. SocIN-DEX, doi:10.1007/s11199-015-0455-3.

Planka, Sabine. "Erotic, Silent, Dead: The Concept of Women in the Films of Stanley Kubrick." *Film International (16516826),* vol. 10, no. 4/5, Sept. 2012, pp. 52–67. Art Full Text, doi:10.1386/fint.10.4-5.52pass:[_]1.

Ruskin, John. "Of Queen's Gardens." The Woman Question: Defining Voices. 1837-1883. New York, Garland, 1983, 79–96.

Schuckmann, Patrick. "Masculinity, the Male Spectator and the Homoerotic Gaze." *Amerikastudien / American Studies,* vol. 43, no. 4, 1998, pp. 671–680. JSTOR, www.jstor.org/stable/41157425.

Slocum, Rebecca. "The Marvel-ous Stan Lee and Diversity in Comic Book." *Intellectual Freedom Blog*, 21 November 2018. www.oif.ala.org/oif/?p=16429. Accessed 15 April 2019.

Tyeson, Cam. "MRA Dipshits Cut A Version Of 'Endgame' With No Brie Larson & 'No Gay Shit.'" *Pedestrian*. 13 May 2019. https://www.pedestrian.tv/film-tv/mra-fuckwits-avengers-endgame-cutdown/ Accessed 13 May 2019.

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Exploring Shinto Themes and their Contribution to Environmental Education in Miyazaki's Studio Ghibli

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Abstract

The films of Hayao Miyazaki are beloved by children and adults all over the world, but in no place more than Japan. This paper is an exploration of various Shinto themes within four films of Miyazaki, including My Neighbor Totoro, Spirited Away, Princess Mononoke, and Nausicaä of the Valley of the Wind. Themes include pollution in both a cultural and environmental sense and the revival of traditional Japanese beliefs and ways of life. Methods will consist of an examination of all major Shinto themes which present themselves in film, previous studies done by others on Studio Ghibli, and a qualitative look at the content of the films in question. Additionally, there will be a discussion of how these films impact viewers and aid in the diffusion of Shinto ideals regarding nature, the environment, and traditional Japanese ways of life predating the changes wrought by modernity.

Overview of Shinto and its Presence in Studio Ghibli

The goal of this study is to reveal the connections between Studio Ghibli films, the indigenous Japanese religion of Shinto or *Kami-no-Michi*, and environmentalism and reverence for nature that is crucial to modern day conservation and education. Common themes of Shintoism found Hayao Miyazaki's Studio Ghibli films translate into the diffusion of Shinto ideas in contemporary Japan and the rest of the world, and can be used as a tool for educating a global audience on the importance of environmental appreciation and stewardship. Methodology behind this research includes analysis of four Studio Ghibli films, *Spirited Away, My Neighbor Totoro, Princess Mononoke,* and *Nausicaä of the Valley of the Wind*, and of books and journal articles from scholars in the fields of religious, Japanese and Asian, and environmental studies. Academic knowledge is paired with the wisdom of the 79th Grand Master of Yamakage Shinto, Motohisa Yamakage, and of course, Hayao Miyazaki himself – director, producer, screenwriter, animator, author, and artist behind the films of Studio Ghibli.

The concept of Shinto is infamously difficult to pin down. Many academics and practitioners of Shinto believe that it is an ancient religion that has existed for thousands of years, while others believe it has only been around as it is now since the Meiji Era (1868-1912). Either way, it is undeniable that Shinto beliefs are inextricably linked with the geography of Japan and hold deep meaning to those who practice it. There are several important aspects of Shinto that are both integral to the practice and feature heavily throughout the films of Miyazaki. These include the concept of the *kami* and a deep connection with and reverence for nature, ritual purification or *harae,* shrines, and a number of symbols such as *shide, torii* gates, camphor trees, and *shimenawas.*

A cornerstone of Shintoism is belief in *kami.* Though the idea of what *kami* is has proven

Figure 1: Depiction of Izanami and Izanagi, by Kobayashi Eitaku, late 19th century. This image is in the public domain.

nearly impossible to translate from Japanese to English, some have attempted to translate it as "god" or "deity," neither of which captures the true spirit of the term (Ross, 1965, p. 32). The closest explanation of *kami* is that is represents "the living essence of a thing" (de Sutter, 2012, p. 5). Yet others have described *kami* as standing for something that is not completely present or visible, but for the feeling of awe that accompanies it, similar to holiness. No matter the exact conceptualization, it is sure that kami is something to be respected (Ross, 1965, p. 32). In original Shinto mythology, when the original *kami* of "procreation and production," Izanagi and Izanami (see *Figure 1*), proceeded to procreate, everything they produced was called *kami*, with no exceptions, even for non-living elements of nature, such as mountains, lakes, and seas (Ross, 1965, p. 19). All things created thus were infused with divinity and were worthy of deep respect and appreciation. Therefore, if the *kami* is the spirit of every tree, flower, mountain, stream, etc. then Shinto itself is an inherently environmental and nature-based religion, making the *kami* inseparable from people's intuitive reverence and love of nature (Wright & Clode, 2005, p. 4).

Miyazaki himself says of Shinto and *kami*, "in my grandparents time it was believed that spirits [*kami*] existed everywhere – in trees, rivers, insects, wells, anything. My generation does not believe this, but I like the idea that we… should treasure everything because there is a kind of life in everything" (Miyazaki in Boyd & Nishimura, 2004, p. 16 qtd. in Stibbe, 2007, p. 472). Miyazaki perceives the *kami* as not literal spirits, but as a "very warm appreciation for the various…humble rural Shinto rituals that continue to this day throughout rural Japan" (Miyazaki in Boyd & Nishimura, 2004, p. 16 qtd. in Stibbe, 2007, p. 481). Shinto is so integral to the films of Miyazaki and is "part of the spiritual geography of traditional Japan" to the point that it blends in with nature in ways which make it impossible to say where religion stops, and nature begins (Stibbe, 2007, p. 481).

There is one aspect of the ritual process in particular that is key in understanding Shinto, and that is purification, or *harae*. The basis of purification in Shinto stems from the myth of Izanagi purifying himself in the salty water where the river meets the sea in order to rid himself of the pollution caused by coming in contact with death in the underworld (Ross, 1965, p. 96). Purification is an essential part of the shrine-visiting experience, whereby the visitor will sprinkle their face or hands with water before entering the shrine (Bocking, 1997, p. 45; see *Figure 2*). The concept of purification is seen in Studio Ghibli films in two ways, both literal purification of pollution of the self and metaphorically of the natural world that has been polluted by humans.

There are a number of symbols associated with Shintoism, of which the most recognizable, both in Japan and in the films of Miyazaki, are shrines,

Figure 2: Example of a Shinto purification basin at Itsukushima Jinja. This image is in the public domain.

Figure 3: Main gate at Fushimi Inari-taisha in Kyoto. Sourced from Wikimedia Commons, licensed under CC BY 2.0.

Figure 4: *Shimenawa* (sacred twisted rope) and *shide* (white paper cut in a ziz-zag pattern). Sourced from Wikimedia Commons, licensed under CC BY-SA 3.0.

Figure 5: The Itsukushima Shrine *torii* gate in Hiroshima prefecture, Japan. Sourced fromWikimedia Commons, licensed under CC BY-SA 3.0.

waterless purification represented by *shide* (paper cut in a zig-zag pattern), and the gateways to shrines and other sacred realms marked by *torii* gates, camphor trees, and *shimenawa* (sacred twisted ropes) (see *Figures 3–5*).

These objects and places are used in film as they are in Japan: to represent movement from the secular to the sacred. They are used in film to symbolize either the movement of the characters to a sacred realm as in *Spirited Away* and *My Neighbor Totoro*, or the inherent Japanese quality of the landscape in which the film is set like in *Princess Mononoke*. Shrines, as described by Yamakage are "like a body" in that they "contain the spirit of kami when it comes down to manifest its presence in this world" (Yamakage, 2000, p. 66). *Torii* gates and *shimenawa* often frame the entrance to Shinto shrines because the function of both the *torii* and *shimenawa* is to delimit a sacred or purified space (Bocking, 1997, p. 164).

Another feature of Shinto that can be seen in these films is the idea of the hidden world, or *kakuriyo*. It is common for characters in Studio Ghibli to have experiences that are completely real, but may not take place in their normal reality, which is discussed in more detail in analyses of the films *My Neighbor Totoro* and *Spirited Away*. This is because "the entire universe is the land of *kami*, and the ancients viewed the universe as consisting of both visible and invisible worlds" (Yamakage, 2000, p. 151-152). The invisible world of the *kami* is a place many of the characters end up finding, and it is almost always demarcated by some kind of Shinto symbol mentioned previously, like *shide* and *torii* gates.

There is no better evidence for the influences of Shinto and Japanese tradition on Studio Ghibli, than the thoughts of Miyazaki himself on the subject. Fortunately for those studying his films, he has often spoken openly about the influences of nature, traditional Japan, and his own childhood and family growing up in Japan on his films. Of the Japanese reverence for nature, he said in 1998 that "the place where pure water is running in the depths of the forest in the deep mountains, where no human has ever set foot, the Japanese have long held such a place in their heart" (qtd. in Wright & Clode, 2005, p. 1). He also has strong feelings on the loss of traditional Japanese culture by modern generations, and how his films may influence these generations into appreciating the ways of traditional Japan. He has stated that:

> *It is a poor idea to push all the traditional things into a small folk-culture world. Surrounded by high technology and its flimsy devices, children are more and more losing their roots. We must inform them of the richness of our traditions. (Reider, 2005, p. 8)*

And of his own interests in spreading awareness of environmental issues, he has said, "I've come to the point where I just can't make a movie without addressing the problem of humanity as part of an ecosystem" (Wright & Clode, 2005, p. 3). It is evident that Miyazaki is true to his word in this regard, when examining the content of his films and focusing on the relationship between humanity and nature.

Four Films Embodying Shinto Ideals

There are four films in particular of Miyazaki's Studio Ghibli that reflect most strongly the themes of Shinto discussed previously. These films are *Spirited Away, My Neighbor Totoro, Princess Mononoke*, and *Nausicaä of the Valley of the Wind*. 1997 marked the release of Miyazaki's *Princess Mononoke,* which "eclipsed Steven Spielberg's E.T. to create a new box-office record," (Wright & Clode, 2005, p. 1). Just four years later, *Spirited Away* became the "highest grossing film of all time in Japan" following its release in 2001, and won several awards, including the 2003 Academy Award for Best Animated Feature Film and a Golden Bear in the Berlin International Festival in 2002 (Reider, 2005, p. 4).

Spirited Away

Spirited Away, or *Sen to Chihiro no kamikakushi* focuses on a young girl named Chihiro, who, after her parents have been turned into pigs as punishment for gorging themselves on the food of the *kami*, must work in a *kami* bathhouse so she can save them. The most prevalent themes and symbols present in Spirited Away are the concepts of purification in the *kami* bathhouse, the pollution of the environment caused by modernity, industrialization, and consumerism, and the symbolism involved in the character's movement between the world of the humans and that of the *kami*.

At the beginning of the film, as Chihiro and her parents are about to complete the journey to their new house, they try to take a shortcut and become lost. As they drive down a dirt road framed by a tunnel of trees, one may notice that there is an "old *torii* gate leaned against a tall camphor tree" which, as is the job of such demarcations, "offers the subtext of the passage from the secular into the sacred" (Wright & Clode, 2005, p. 5). Sure enough, they find themselves not at their new house, but in the realm of the *kami*, where Chihiro must work in a bathhouse to save her parents. In this unseen world that Chihiro must navigate, audiences can see the "ancestral spirits working on their own purification" (Yamakage, 2000, p. 153). The bathhouse of the *kami* plays a central role in *Spirited Away* and is a testament to the long-standing popularity

of the Japanese bath which is traceable to the "ancient Japanese use of water for purification" (Ross, 1965, p. 96; see *Figure 6*).

Figure 6: Dogo Onsen public bathhouse in Ehime prefectura
Sourced from Wikimedia Commons, licensed under CC BY-SA 3.0.

One particularly challenging episode of Chihiro's journey features a being who enters the bathhouse and who most believed to be a stink god. His presence is met with disgust and his oozing, muddy form leaves a trail through the bathhouse. Only when he is in the bath and Chihiro discovers a "thorn" in his side which the bathhouse staff join together to remove, is his true form as a River god is revealed. This sacralization of the river is part of the Shinto doctrine which sees the potential for the sacred in all things, including non-living natural features like bodies of water (Napier, 2006, p. 303). The "thorn" in his side is revealed to be a bike handle, followed by a mountain of garbage, such as a toilet, oil barrel, tires, large pieces of metal, and various other objects of industrial waste.

This moment is a clear and powerful commentary on the environmental pollution caused by the reckless dumping of waste that is a hallmark of the modern era. Another feature of the freshly purified River god is that his face takes on the form of a traditional Japanese *Noh* mask (see *Figure 7*). The fact that the spirit has the face of a *Noh* mask, which is a symbol of Japanese cultural tradition, makes the equation between the environment and the Japanese psyche very clear (Napier, 2006, p. 303).

Miyazaki states, "I really do believe that the river gods of Japan are existing in that miserable, oppressed state. It is not only the humans who are suffering

Figure 7: *Noh okina* (old man) mask
similar to the one portrayed in Spirited
Away. Sourced from Wikimedia Commons,
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on these Japanese islands" (qtd. in Napier, 2006, p. 303). The environmental
conclusion one may reach is that the river, which has been polluted by modern
day civilization's trash and unwanted goods, has become a sort of sacrifice to
consumerism (Napier, 2006, p. 303). The personification of the pain and suf-
fering felt by the river can be an effective tool for motivating audiences to care
about their surroundings and the state of their environment—not just as water
or dirt, but as something alive and in need of protection.

Another figure who features heavily is the faceless being, aptly deemed "No
Face," who enters the bathhouse only when Chihiro lets him in assuming he is
another *kami* guest. He proceeds to gorge himself on the whatever he can get
his hands on, morphing into a grotesque being whose only motivation is to
consume more and more, including food from the bathhouse kitchen and sev-
eral of the people who work there. The prevalence of this character in the film
suggests and reinforces the concept that the modern world is out of control
and, like Chihiro's parents, is motivated only by the empty urge to consume
(Napier, 2006, p. 305).

Spirited Away brings the viewers' attention to a set of interlinked trends
which have dominated Japanese society for the past two decades and which
can be summarized by the words *kokusaika* and *furusato*. These are words, re-

spectively, for the concepts of "internationalization" and "native place" or "old hometown" (Napier, 2006, p. 287). On one hand there is modern life, which brings with it Chihiro's father's credit card, consumerism, and pollution that has endangered the existence of the River god Chihiro must bathe. On the other hand, there is the traditional *kami* bathhouse with its function of cleansing and purifying, the underlying principle that hard work is the answer to salvation, and the concept that goals are achieved more easily when people work as a group, illustrated in the group effort and work that leads to the restoration of the river spirits health. The River spirit's *Noh* mask also suggests not only environmental renewal, but cultural renewal as well, by the fact that when the pollution is cleansed it reveals within it a symbol of traditional Japanese culture (Napier, 2006, p. 303).

My Neighbor Totoro

My Neighbor Totoro or *Tonari no Totoro* is an excellent example of Miyazaki's portrayal of a pure human connection with nature. It is contemporary, but takes place in an idyllic, rural setting evocative of traditional Japan. In fact, there are very few cars or signs of any other accoutrements of modern-day technology. My Neighbor Totoro features the interaction of humans, nature, and forest spirits in a rural setting and is described by film critic Kano Seiji as having "extremely original and powerfully persuasive ways of representing nature" (Stibbe, 2007, p. 468). It is a simple story, revolving around two young girls and their father who have just moved into a new house in the countryside. The girls are enraptured by every detail of this natural setting, and through a series of supernatural encounters they meet and befriend a benevolent being they call Totoro, who is the spirit of the forest.

Shinto animism is subtly interwoven throughout the film and is most prevalent in the presence of a giant camphor tree in the forest which is wrapped with *shide* strung on a *shimenawa* and which serves as a gateway to the portion of forest where Totoro lives (Stibbe, 2007, p. 480; see *Figure 8*). Mei, the little sister, is the first to have an experience with the *kami*, though the dreamlike quality of the encounter shows that there are not clear boundaries between the hidden world and typical reality. After this first encounter with Totoro, Mei, her older sister Satsuki, and their father go to pay their respects to the shrine for the forest to thank it for taking care of her. On the way they pass through a *torii* gate and find the shrine is next to the giant camphor tree strung with shide that Mei was talking about while she was visiting Totoro.

Another event involving the hidden world is when Totoro gives the girls a gift of acorns which they "decided to plant in the garden to make a lovely for-

Figure 8: 3000-year old sacred camphor tree of Takeo Shrine, wrapped in shide. Sourced from Wikimedia Commons, licensed under CC BY-SA 4.0.

est." That night, Totoro and the smaller Totoro arrive and the girls join them as they gather around the garden to do a dance to make the acorns grow into one massive tree. The next morning when they wake up, there is no tree, but the seeds have sprouted. Because they shared this experience, it is obvious that it did happen; not in the "real" world, but in the world of the *kami*.

My Neighbor Totoro uses a variety of techniques to encourage "ecological consciousness closely attuned with local ecosystems, where human needs are met through participation in nature rather than material accumulation" (Stibbe, 2007, p. 484). In a similar vein as themes of consumerism in *Spirited Away*, it is not just appreciation of nature that is prompted, since Miyazaki "wanted it to be a film where viewers relate Japan's future environmental and ecological problems to the condition of the society which surrounds them" (Miyazaki, 1988, qtd. in Stibbe, 2007, p. 472). It is the subtle animistic portrayals of human interactions with nature in the middle of a modern Western-influenced culture that is suffering from increasing levels of alienation from the natural world that "brings with it the potential to contribute to new forms of environmental education" (Stibbe, 2007, p. 469).

Princess Mononoke

Princess Mononoke is another of Miyazaki's films with strong environmental messages, especially those of nature versus humanity. The main focus of the film is the journey of a young man named Ashitaka as he searches for the cure to a curse that was wrought on him by a Boar god. In his search he gets caught in the middle of a war between the *kami* of the forest and the Yamato people who live in Iron Town and are destroying the forest in pursuit of iron for their tools and weapons. The word *mononoke* is commonly used in Shinto and is defined as "the bad vibration that is released from a wicked thought or spirit" (Yamakage, 2000, p. 209). This is a clear commentary on the actions of the Yamato against the beings of the forest. In describing the symbolism involved in the beheading of the forest spirit by the leader of the Yamato and the subtle Shinto beliefs obvious to Japanese viewers, Wright and Clode say it best:

> *A non-Japanese audience viewing Princess Mononoke can clearly read the symbolic beheading of the spirit of the forest in terms of globally circulating narratives of environmental destruction, whereas a Japanese audience are also likely to simultaneously engage here with specific allusions to kami…and Shintoist tenets of respecting and communing with nature's deities. (Wright & Clode 2005:3)*

What *Princess Mononoke* provides its audience is an array of nature-based deities who show how fragile their role is in relation with humanity, creating a powerful allegory for the real world decimation of cultures and species, while simultaneuously refusing to characterize human beings as different from or better than other other animals (McHugh, 2010, p. 13). This once again echoes Miyazaki's assertion of wanting to portray humanity in his films as part of, rather than separate from, an ecosystem (Miyazaki qtd. in Smith & Parsons, 2012, p. 27). *Princess Mononoke* is multi-faceted in its approach to representations of people and the environment, as it calls upon the viewer to "think about compassion for the poor and disenfranchised in tandem with care of nature, as per the underlying principle of environmental justice" (Smith & Parsons, 2012, p. 29). There is no black and white in *Princess Mononoke,* as Ashitaka himself seems to care for the forest and for the ostracized people of Iron Town in equal measure.

Nausicaä of the Valley of the Wind

Shinto themes in the film *Nausicaä of the Valley of the Wind* are more implicit than the other three films discussed, as there is no physical symbolism present. But Shinto ideals are still represented in the overall tone, the inspiration for the

story, and the clear environmental messages found in the film. *Nausicaä* is set in a future where the world has been destroyed by humans in what they call "the seven days of fire." There are only a few pockets of humanity left, and the rest of the world has been taken over by the "toxic jungle" – where giant insects called 'Ohmu' have taken over and the plants release spores that are toxic to humans. The hierarchy has therefore flipped, putting the insects at the top while humanity struggles to survive.

Nausicaä, the princess of the peaceful Valley of the Wind, acts as a bridge between the world of the humans and of the insects, which makes sense as the story was based off of a Japanese folk tale called "The Princess Who Loved Insects" (Wright & Clode, 2005, p. 3). She is also a scientist and realizes that the key to humanity's survival is to let the trees flourish and detoxify the soil in which they grow. She goes into a great amount of detail in describing the science of the soil pollution and toxicity. There are other messages relayed by other characters on the importance of the soil in environmental conservation, such as the man who explains that "fire can reduce a forest to ashes in a day, when it takes the water and the wind a hundred years to grow one anew…we prefer the ways of the water and the wind."

Another reason it is evident that the producers of Nausicaä meant for her to embody and disperse environmental messages is the presence of the World Wildlife Fund logo at the start of the movie, giving it a certain amount of legitimacy in its endeavors. Others have pointed out that there are also strong Shinto influences in the position of the Ohmu, saying that the Ohmu, like Nausicaä, embody a core ideal of Shinto – that the natural world will relentlessly find equilibrium, reconciling and harmonizing extremes (Wright & Clode, 2005, p. 5). These films offer unique aspects of the environmental messages in Shinto teaching, providing the viewer with a holistic viewpoint on both the importance of nature and the devastation that would follow its destruction as a result of modern greed and consumer culture.

Contemporary Japan and the Effects of Environmental Messages in Studio Ghibli

An important example of how Shinto-based action has been taken in the pursuit of environmental conservation is the establishment of Sacred Forests near Shinto shrines. The sacralization of these forests has been employed as a tactic for environmental advocacy, as the existence of a shrine serves as a powerful argument against forest destruction on the condition that there are still people willing to engage in legal and political battles in order to defend their status (Rots, 2015, p. 221). Films like Miyazaki's, which expose viewers

to Shinto attitudes toward nature, are part of the key to making sure there will always be people willing to engage in such battles.

   The accessibility of Miyazaki's films serves as a means of educating people about the environment without the limitations of conventional environmental education methods. One of these limitations is the way that environmental education tends to lean on the use of statistics, technical knowledge, and more abstract concepts without grounding those complex ideas in a concrete understanding and appreciation of the natural world and the impending consequences of environmental destruction (Stibbe, 2007, p. 469).

My Neighbor Totoro gives the viewer that grounding and appreciation for what nature has to offer, while *Princess Mononoke* and *Nausicaä of the Valley of the Wind* provide a view of the very real and impending consequences of environmental destruction, and *Spirited Away* offers a glimpse of both with an added emphasis on Shinto's basis in traditional Japanese cultural values. Overall, what these films are able to convey is an idea called the Shinto environmentalist paradigm. This is a term for the concept that Shinto ideology towards nature lends itself perfectly to the conservation and stewardship of the environment. As stated by Rots (2015), "What is interesting about the Shinto environmentalist paradigm is that at its core it is closely intertwined with ideas of what it means to be Japanese" (Rots, 2015, p. 217). This makes Japan special because any portrayal that is set in or inspired by the country will most likely feature some kind of environmental message.

Each of these films has elements that contribute to the refiguring of traditional Japanese values and beliefs into a form that is able to resonate with contemporary viewers (Napier, 2006, p. 289). Once again, Wright and Clode have the best explanation for the impact that Studio Ghibli's use of Shinto has on the people of Japan:

> …*pre-modern expressions of Shintoism are visually transformed and introduced to a largely urban audience through symbolic moments that offer a resonant connection, albeit a mediated one, with the natural and spiritual worlds revered by the Japanese. (Wright & Clode, 2005, p. 1-2)*

My Neighbor Totoro in particular has prompted real action in modern Japan. The environmental journal *Ambio* stated that the film "has served as a powerful force to focus the positive feelings that the Japanese people have for *satoyama* [Japanese term for the sustainable management of forests and agricultural land by communities] and traditional village life." The film's main character Totoro was even used as a mascot by the Japanese 'Totoro Hometown Fund Campaign' to preserve areas of *satoyama* in the *Saitama* Prefecture (Kobori &

Primack, 2003, p. 307). Studio Ghibli films like *My Neighbor Totoro* are able to act as a model of how humanity should treat the natural world, and can help provide the foundation for a better understanding of natural systems, a more caring approach to them, and a way of satisfying human needs without over-consumption (Stibbe, 2007, p. 484).

Miyazaki's films gently suggest that children and adults can benefit from Shinto messages about learning to commune with nature in spite of the environmental alienation that accompanies modernity, and nurture the idea that humanity can return to a more intuitive relationship with the natural world, as revered by Shinto. This is the message that has "endeared Miyazaki's animated worlds to Japanese and increasingly global audiences" (Wright & Clode, 2005, p. 6). Not only are the people of modern Japan influenced by the messages portrayed in Studio Ghibli, but people all over the world also have an opportunity to not only learn about traditional Japanese culture, but also their way of looking at and appreciating nature. According to Motohisa Yamakage, 79th Grand Master of Yamakage Shinto, from ancient times, Shinto has seen it as the "principal duty of human beings to care for and preserve their environment…in Shinto, heaven, earth, and humanity are different manifestations of one life energy" (Yamakage, 2000, p. 13–14).

When all things of the earth are believed to be powered by the same life energy, the people practicing this religion must see nature and the environment as something to be highly respected, just as much as any other *kami* would be. Therefore, seeing the world through a Shinto perspective, whether one practices Shinto or not, could contribute greatly to the careful stewardship of the environment. By making the ecological insights from Shinto traditions available to popular audiences, Studio Ghibli has the ability to be a unique and powerful mechanism for potential environmental action.

CONCLUSION

While a global audience may not recognize the significance of a *torii* gate or of the *shide* wrapped around a camphor tree as a delineation of a sacred space, they will definitely notice the reverence with which the girls from *My Neighbor Totoro* treat nature and interact with the spirit of the forest. They may not think specifically of the damage and pollution that modern society has wrought on the earth, but the grotesque figures from *Spirited Away* who have suffered from this kind of pollution are sure to leave a lasting impression. Average audiences probably don't think about environmental justice on a daily basis, but films like *Princess Mononoke* and *Nausicaä of the Valley of the Wind* provide people with a chance to connect with the struggles between humanity

and the environment, and see an example of the consequences of environmental destruction.

Some may think that the films of Hayao Miyazaki are just basic forms of entertainment, with no clear impact on the world. But, with the amount of influence they have on people, especially children in their formative years, they are able to use strong and well-founded concepts like Shinto as a vehicle for the diffusion of clear messages about the environment and offer a framework for how humans can and should find ways to coexist with nature. These messages are especially clear and poignant for the people of Japan, but their messages and mindsets are available for an ever-growing global audience as well.

References

Bocking, Brian. (1997). *A Popular Dictionary of Shinto*. NTC Publishing Group.

de Sutter, Laurent. (2012). "The Kamis of Kapital." *Cordozo Law Review, 33*(6), from https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=a9h&AN=79565006&site=ehost-live&scope=site

Kobori, Hiromi, & Primack, Richard B. (2003). "Participatory Conservation Approaches for *Satoyama*, the Traditional Forest and Agricultural Landscape of Japan." *AMBIO: A Journal of the Human Environment, 32*(4):307–311. https://doi.org/10.1639/0044-7447(2003)032[0307:PCAFST]2.0.CO;2

McHugh, Susan. (June 2010). "Being Out of Time: Animal Gods in Contemporary Extinction Fictions." *Australian Literary Studies, 5*(2):1–16, from https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=a9h&AN=60096339&site=ehost-live&scope=site

Napier, Susan T. (2006). "Matter out of Place: Carnival, Containment, and Cultural Recovery in Miyazaki's 'Spirited Away.'" *The Journal of Japanese Studies, 32*(2):287–310. https://doi.org/10.1353/jjs.2006.0057

Reider, Noriko T. (2005). "*Spirited Away*: Film of the Fantastic and Evolving Japanese Folk Symbols." *Film Criticism, 29*(9):4–27, from https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=a9h&AN=18274903&site=ehost-live&scope=site

Ross, Floyd Hiatt. (1965). *Shinto: The Way of Japan*. Beacon Press.

Rots, Aike P. (2015). "Sacred Forests, Sacred Nation." *Japanese Journal of Religious Studies, 42*(2):205–233, from https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=a9h&AN=111511127&site=ehost-live&scope=site

Smith, Michelle J., & Parsons, Elizabeth. (February 2012). "Animating child activism: Environmentalism and class politics in Ghibli's Princess Mononoke (1997) and Fox's Fern Gully (1992)." *Continuum: Journal of Media*

and Cultural Studies, 26(1):25–37. https://doi.org/10.1080/10304312.20 12.630138

Stibbe, Arran. (2007). "Zen and the Art of Environmental Education in the Japanese Animated Film *Tonari no Totoro*." *Journal for the Study of Religion, Nature and Culture, 1*(4):468–488. https://doi.org/10.1558/jsrnc. v1i4.468

Wright, Lucy, & Clode, Jerry. (2005). "The Animated Worlds of Hayao Miyazaki: Filmic Representations of Shinto." *Metro Magazine, 143*, from https://search.informit.com.au/documentSummary;d-n=955485226086876;res=IELLCC

Yamakage, Motohisa. (2000). *The Essence of Shinto: Japan's Spiritual Heart. Kodansha International.*

The State of Education in Hawaii: Heightening Awareness to Cyclical Issues of Teacher Shortage and Educational Inequity

Mikayla Palmer

Abstract

The educational system in Hawaii is wrought with challenges that create lessened opportunities for both educators and students at-risk. As the top-ranking state for combined highest cost of living and lowest teacher pay in the nation, educators are being driven from long-term positions and the district is facing an ensuing teacher shortage in alarming numbers. Unfortunately, this leads to an influx of underqualified, migrant, and unexperienced educators teaching in some of the state's most at-risk schools. Certain minoritized communities—namely Native Hawaiian and English Language Learning students—in turn receive less support in completing secondary education and have seen massive drop-out rates in comparison to the rate of the district as a whole. This issue begs the need for state and federal intervention as well as well-developed, social justice centered pedagogy for educators. Moreover, this work seeks to uncover these issues through a look at the history of Hawaii's education, factors that have led up to its educational crisis, and the outlook for Hawaii's educational future.

Introduction

A quick Google search on Hawaiian education will reveal eye-catching—yet concerning—headlines about the Islands' struggle to provide quality public schooling. Further research will uncover in this diverse region so distanced from Mainland USA, Hawaii's schools are wrought with challenges often only seen in minoritized, metropolitan areas. Perhaps a result of naivety to the pitfalls of island education, American teachers are being enticed to Hawaii with promises of open positions in paradise, yet they arrive with little briefing on the major issues contributing to both the Islands' continual need for educators and the lack of equity for at-risk student populations. With this understanding, we are led to ask, with so much emphasis on empathetic, social-justice centered pedagogy in the twenty-first century, how is it that such a large region of education—an entire state—has flown under our radar and been subject to neglect? Therefore, in order to identify areas where equitable education is yet to be within reach for minoritized students, one must acknowledge the state's pained history as well as current areas of weakness: low pay that contributes to a teacher shortage, and subsequent bleak prospects for the Islands' next generation of native leaders.

There is a heaviness and a level of subjectivity that comes with emphasizing the areas of failure in any system of education, let alone an entire region of public schooling in the United States. Deep-seated and cyclical issues laying under the surface in Hawaii's public education not only adversely affect teachers, but, in turn, have lessened the opportunity for minoritized students to receive equitable education. In order to understand the state of education in Hawaii, it is advantageous to first examine the demographics of the area as a whole—to study the structure of the Islands' schools that make up the most diverse state in the nation.

Demographics

Resting at a geographic midway between Japan and the continental United States and holding status one of the world's most recently colonized societies, Hawaii's schools are represented by a blend of East-meets-West culture. The Hawaii Department of Education shows a community of 37 percent Asian descent, 22 percent belonging to white or European descent, 19 percent belonging to two or more races, and 9 percent belonging to Hawaiian or Pacific Islander heritage. This demographic also features students ages five and over with nearly 80 percent of whom speak primarily English and an additional 20 percent who speak some level of developing English ("ACS-ED District Demographic Dashboard"). This blended population of youth represents the next

generation of Hawaiian learners and citizens.

The National Center for Educational Statistics reveals the median household income of students in Hawaii at roughly $75,000; with this, there is a presence of 12 percent of students who live below the poverty level and 21 percent who rely on Food Stamps or benefits from the Supplemental Nutrition Assistance Program (SNAP) ("ACS-ED District Demographic Dashboard"). One may attribute this inequality of a relatively high average income yet remaining presence of poverty to the state's cost of living—which is highest in the nation (Cohn). This living expense may be a major factor that both fuels and heightens the disparity regarding student socioeconomic status on the Islands.

Hawaiian Education

The Hawaii Department of Education

There are other factors affecting the unique experience of schooling in the district of Hawaii: namely, the district itself. Noteworthily, the Hawaii Department of Education is the only district in the United States residing over the entirety of an annexed state, although Puerto Rico, an island-set U.S. territory, follows a similar structure ("Connect with Us"; Sawe). Additionally, this municipality, which spans six major islands nestled in the South Pacific, holds an enrollment at over 180,000 ("District Directory Information: Hawaii Department of Education"). Such a large student body places the district at the tenth largest in the nation, under school systems spanning metropolitan areas such as Houston, Texas and Miami-Dade Country, Florida (Sawe). This uniquely large enrollment causes rural island schools to be set against some of the most highly concentrated institutions in the nation.

History

Hawaiian education is notable not only for its unique standing in American education but for a recent history that is both distinct and pained. Island public schooling was established in 1840 by King Kamehameha III; this system today stands as the oldest educational institution "west of the Mississippi" and holds the title for being the only school district in the United States established by a ruling monarch (Sang). While Hawaiian education found its roots in its nativism, this system was not longstanding, and it ultimately fell prey to colonization and Anglo-American standardization.

As decades of political disputes and English influence infiltrated the nation, the effect this had on classroom policies was direct. In the first days of Hawaiian education, nearly a century before Hawaii would gain official status as a

state and half a century before Hawaii would be considered a United States territory, instruction was delivered solely through native Hawaiian language (Sang). However, in 1893, the Hawaiian monarchy was overthrown, and by 1896, instruction in any language rather than English was banned in public schools (Sang). This became a largely unchallenged norm for island education for the next sixty years.

It was not until the latter part of the 1960s that indigenous grassroots movements and a push for Hawaiian sovereignty allowed for conversation about the role of native culture within education to re-enter the public sphere. There entered a new concern and push to restore the prevalence of Native Hawaiian language as the last generation of solely native speakers were beginning to mature (Sang). This movement was recognized in the 1978 State Constitutional Convention granting that in public schools the State promote "the study of Hawaiian culture, history and language" ("State Constitution"). In following years, the Hawaiian Education Committee created the Hawaiian Studies Program and Hawaiian Language Immersion Program, which sought for a more immersive study of culture and aid native-speakers in acclimating to English-focused curriculum (Sang). While this arguably did not result in an immediate reclamation of Native Hawaiian language in public schools, the initiative largely laid the groundwork for the state of education as it is today. These actions may be considered a step in the right direction, but it is arguable whether these programs have survived national educational reform or encouraged any true recollimation or flourishing of Hawaiian culture to be utilized by the next generation.

While this data may be unique for its historical significance, perhaps a natural line of thought lends itself to the effect of this cultural and language shift in Hawaii's modern-day classroom. The reality is that such a large, culturally diverse, and historically pained school district comes with a distinct set of needs that require intentional, careful intervention by teachers. This is where one may begin to look at how its force of underpaid, migrant educators has handled this unique history and student body.

Given this wealth of statistics merely hint to the condition of education in Hawaii, one is led to ask questions such as: How has this unique population handled a public education system streamlined for mainland visions of standardization and Every Student Succeeds equality? How is this system meeting the needs of every student? What about students considered to be "at-risk"? While the answers to these questions may not be comprehensively answered through an evaluation of test scores and statistics, thorough analysis may reveal a jumping off point for areas in greatest need. This is a step towards understanding.

As mentioned, it takes only cursory research to reveal deep issues lurking under the surface in Hawaiian schooling. A widely-shared article published by CityLab, an offshoot of The Atlantic, titled "Why Hawaii is No Paradise for Teachers," details a social media frenzy brought on by advertisements for teaching positions in paradise that went viral in 2016 and an ensuing outcry of local educators who claimed the positions were less-glorious and less-paid than they were let on to be (Schuler). A quick browse of remaining search results reveals editorials that argue for changes in curriculum alongside an onslaught of national news articles providing commentary to the negative situation for teachers in the state.

Cost of Living

Teacher Salaries

Given the many claims of the teacher "shortage" in Hawaii that fill pages of Google search results, it only takes cursory research to understand the root of the issue: pay. As a state that lets out a seemingly constant cry for more educators, boasts of apartments with ocean views, and offers a base pay around $50,000 a year ("Secondary School Teacher Salary"), the problem for teachers may be hiding in plain sight—the allure and competitive nature to live on the islands themselves. The cost of living is simply too expensive for educators to survive in such a heavily sought-after location. While it may be enticing to a teacher to read about job opportunities in paradise, often advertised with starting pay higher than most cities on the mainland, it is apparent that such an offer is gilded over a severe and cyclical issue.

Not only is it a costly and labor-intensive decision for one to uproot life on the Mainland and become a teacher in Hawaii, but financially, it is difficult to justify. An article by Mary Vorsino titled, "Hawaii is Scrambling to Fill Teacher Vacancies. This Analysis on Salaries Won't Help," analyzes this issue of living expense for teachers and states that, when cost of living is factored into the average salary, teachers in Hawaii make less than any other state in the nation. Further, the piece centers around a quote from the president of the Hawaii State Teachers Association, Corey Rosenlee, which states, "The reality is we've got to pay our teachers better…It's just too difficult to survive as a teacher in Hawaii" (Vorsino). These words are less than reassuring from one of the leading voices in education in the state.

Vorsino also provided a spread of median salaries of other states factored in with cost of living. To put matters into perspective, a teacher in Michigan making $63,868 per year may make, when adjusted according to cost of living,

a salary of roughly $71,773. Teachers in Hawaii made an average of $57,431 in 2016, but given the state's high cost of living, teachers may only make an amount comparable to $40,246 (Vorsino). Unfortunately, with an average cost of monthly rent at over $2,000 between the Islands, such a small income would require an educator to use nearly 50 percent of their pre-tax monthly earnings on housing if they were to stay in this median price range (Josephson). While this allocation of personal finances is not unheard of in expensive locations, it is hardly compatible in the long-term for a professional concerned with maintaining savings, supporting a family, and affording other high-cost island expenditures.

Island Expense

On the same note, it is necessary to consider exactly how expensive it is to live in Hawaii and the effects of this cost of living on other necessary expenses. A study by MERIC indexed cost of living across states and awarded Hawaii an index of 197.6, a number considerably higher than any other state. For reference, coming in at second place is New York at 155.9 and California in third at 142.7. Those in the Midwest, however, average over one-hundred points lower than Hawaii and are nearly all indexed at numbers below 90 ("Cost of Living Data Series").

One moving from a state with low cost of living would expect to see an increase on grocery prices. Such an increase can be justified by the idea that nearly 85 percent of the state's food is imported from the mainland (Kent 30). Although we do not yet see headlines of teachers living in abject poverty on such a salary, such expenses when paired with exorbitant housing costs hardly make for comfortable living.

Educator Turn-Over

This dilemma has resulted in teachers who are struggling to make ends meet. The state holds one of the highest rates of educational turnover in the United States as Hawaii currently struggles to hold onto more than 51 percent of the teachers hired since the 2013-2014 year ("Teacher Shortage Worsening"). Moreover, perhaps as a reach to mind the gap left by turnover, the Hawaii Department of Education has lowered their demands so, in instances of high-need, teachers are not always required have a degree in education to serve in its classrooms; this is often set in place in hard-to-staff areas, which subsequently, on average, house students with the greatest set of socioeconomic and educational challenges ("Increasing Hard-To-Staff Bonuses"). Such a lowering of the "bar" for educators has led to much higher numbers of unqualified, inexperienced, or out-of-field teachers. While these statistics, to be further examined,

are discouraging for educators considering a move to the Islands, the effects of this dilemma are reaching students at an individual level.

Efforts to Promote Equity

To best examine the effects of this educational crisis of unqualified, underpaid educators teaching in a heavily diverse island-state, we are led to look at what has been done to increase opportunity for all populations of students, especially those who are the targets of equity-based national education. It is safe to say that initiatives such as the Hawaiian Studies Program, Hawaiian Language Immersion Program, and other equity-based national programs do not exist to help middle-class, English-speaking, Caucasian students be enabled for opportunity, but instead are deemed effective by their attention given to minority populations. An in-depth look at the situation in Hawaii serves as a mirror to the "success" of these programs.

Support for At-Risk Students

Who Is Considered At-Risk?

In an attempt to clarify who is included as "at-risk" students, I turn to a 1992 study published by the National Center for Educational Statistics which determined a definition for this term that holds true today. It described an at-risk student as one who may have comparatively lower test scores than their peers and a high likelihood of dropping out of school. Additionally, this consideration for at-risk status may also be influenced by a student's gender, socioeconomic status, and ethnicity (Kaufman and Bradbury). Hawaii's diverse population introduces a large group of at-risk students in two categories: English Language Learners and Native Islanders.

While over 90 percent of students in Hawaii Public Schools do receive a high school diploma, students who are deemed most at-risk seem to be the outliers in the equation. For example, during the 2015–2016 year, it was reported that English Language Learners had a 50 percent graduation rate ("Strive HI: Student Performance Report"). This is a far cry from numbers seen in the student majority.

Educational Support, Classroom Dynamics, and Code Switching

So, what type of support is offered to these communities of students with greater need? Studies show that at-risk Native Hawaiian students have an exceptionally higher chance of being placed with teachers who have little experience, are out of their field, or are unqualified for their positions ("Equitable

Access to Excellent Educators" 30). This is alarming news for students who make up the dwindling population of Pacific Islanders and who will ultimately make up the next generation of native leaders on the Islands.

These issues also translate directly to classroom dynamics and curriculum in Hawaii Public Schools. Ines Miyares comments on the effect of gentrification in Hawaiian education in her journal Geographical Review by declaring "Anglo conformity" as a "major subtext of Hawai'i's statewide K-12 curriculum" and, aligning with statistics, that Native Hawaiians are often encouraged to pursue local post-secondary options, such as trade schools or community colleges, and stay in "blue collar" lines of work (522–523). While this disposition certainly does not stand as an argument against the validity and necessity of blue-collar lines of work, this is hardly the mindset needed by an educator to raise up and booster the voices of native leaders in a dwindling indigenous community.

On the subject of lending voice to Native Hawaiians and English Language Learners, it is apparent that the imposed curriculum in the state struggles to accommodate those who do not have a working level of fluency. Although some efforts have been made to celebrate and incorporate Hawaiian language and culture in schools, as mentioned with the Hawaiian Language Immersion Program, the conflict between one's born-into culture and culture of economic opportunity (i.e. Anglo American, Standard English speaking, etc.) is alive in Hawaii public schools as it is in other diverse areas in the nation. Miyares accounts this to natives' lack of fluency in Standard English. She states, "Local students who want to attend universities are caught in the same bicultural dilemma as students from mainland minority communities. They often find themselves code switching between identities, local and Anglo dominant, depending on the context of the moment" (522). For educators, this begs the need for well-developed pedagogy that understands and accommodates these challenges of reclaiming native language and culture from the culture of the colonized. Further, it can be presumed that a teacher who did not complete an educator preparation program may not have the appropriate tools to adequately address these unique classroom challenges.

Addressing Longstanding Issues

This issue of equitable education takes on a quality that goes beyond what is seen in graduation rates and test scores; it is a conflict that spans culture, economy, and educational reform that results in a challenging classroom dynamic. To sum things up in the words of Miyares, modern-day Hawaii shows a "population [that] reflects the tensions between the culturally pluralistic 'spirit of aloha' and the ethnic-cum-social stratification that has evolved from its historical economic geographies" (513). While from an onlooker's perspective the

culture of Hawaii may seem to hold fast to diplomacy and the "aloha spirit" while keeping its loyalties with the passivists, let those on the outside not forget the nearly two centuries of Native Hawaiian families that have been pushed to adapt and survive as their homeland undergoes massive political and economic changes at their own expense.

Likewise, in order to address these issues for the sake of creating a lasting change, teachers must be properly educated on and compensated for creating classrooms as a space of equity and justice-centered dialogue. Perhaps the most viable way to encourage this would be to narrow hiring requirements to only allow those who have graduated from a certified educator preparation program and received social justice focused educational training to teach in its schools. Of course, in order to do so, there must be an incentive to draw qualified teachers into these positions—in this case, a salary that supports Hawaii's cost of living.

There have been some recent efforts to address the issue from the top down, such as the Board of Education's "bold step" to implement a $46 million salary adjustment, with hopes of resolving the teacher shortage by 2025 (Walker). While this may seem like a step towards healing, time will tell if these funds, allocated across six islands and 7,000 teachers, will be enough to draw in and keep employees who are qualified in their positions for the long-haul. At the least, one may hope that this is the first of many bold actions taken to ensure that Hawaii's schools are filled with teachers able to meet the needs of their diverse and at-risk student populations.

Creating Lasting change

With this wealth of information comes a need to regain independent control in a region that has been prey to Anglo-American visions of gentrification and commercialism. At the top tier, there is arguably a need by policy makers, committees, and administration to acknowledge this issue for what it is, continue to reallocate funding to ensure fair pay for teachers, and promote a curriculum representative of and sensitive to Island demographics. Likewise, on a more human level, there is a more obtainable need for empathetic educators who are willing to work within the scope of a social-justice framework and fight to raise the bar of opportunity that has been set far too low for our native and English Language Learning students.

It is not that the Hawaii Department of Education has not been speaking or has not worked actively to promote its concerns, but it seems that their voice has been drowned out by the 3,000 miles of ocean between them and the nearest school district. While it does seem that we are entering an era where

Native Hawaiian voices are bringing to the surface cultural conflict that has silently marred the Islands for centuries, such seen recently within the Mauna Kea protests (Lam), there remain issues within the context of education that still beg for advocacy.

Let us not fail to acknowledge, first, the undercurrent of pain in Hawaii that results from stifled language and culture, and second, the issue of teacher pay that plays a major role in cyclical issues of inequitable education. Let us not get lost in empty promises of teaching in paradise and acknowledge Hawaiian education for what it is: a place in need of protection and where future native leaders remain at-risk. There is a need to advocate on behalf of Hawaii's education in hopes that it will one day reflect the flourishing present elsewhere in the Islands native heritage and land.

Works Cited

"ACS-ED District Demographic Dashboard 2013–17: Hawaii Department of Education, HI." *National Center for Education Statistics, US Department of Education*, 2019, nces.ed.gov/Programs/Edge/ACSDashboard/1500030.

Cohn, Scott. "America's 10 most expensive states to live in 2019." *CNBC*, CNBC LLC, 10 July 2019, www.cnbc.com/2019/07/10/americas-10-most-expensive-states-to-live-in-2019.html.

"Connect with Us: About the Department."*r5 Hawai'i State Department of Education*, www.hawaiipublicschools.org/ConnectWithUs/Pages/Home.aspx.

"State Constitution." *Legislative Reference Bureau*, lrbhawaii.org/con/conart10.html.

"Cost of Living Data Series." *Missouri Economic Research and Information Center*, 2020, meric.mo.gov/data/cost-living-data-series.

"District Directory Information: Hawaii Department of Education." *National Center for Education Statistics, U.S. Department of Education*, 2019,nces.ed.gov/ccd/districtsearch/district_detail.asp?Search=2&details=1&ID2=1500030&DistrictID=1500030.

"Increasing Hard-To-Staff Bonuses Would Ease Hawaii's Teacher Shortage Crisis." *Hawaii State Teacher's Association*, 14 Nov. 2019, www.hsta.org/News/Recent-Stories/increasing-hard-to-staff-bonuses-would-ease-hawaiis-teacher-shortage-crisis.

Josephson, Amelia. "The Cost of Living in Hawaii." *SmartAsset*, 10 July 2019, smartasset.com/mortgage/the-cost-of-living-in-hawaii.

Kaufman, Phillip, and Denise Bradbury. "Characteristics of At-Risk Students in NELS:88." *National Center for Education Statistics*, Aug. 1992, files.eric.ed.gov/fulltext/ED566856.pdf.

Kent, George. "Food Security in Hawai'i." *Food and Power in Hawai'i*, 30 Sept.

2016, doi:10.21313/hawaii/9780824858537.003.0003.

Lam, Kristin. "Why are Jason Momoa and other Native Hawaiians protesting a telescope on Mauna Kea? What's at stake?" *USA Today*, Aug. 2019, www.usatoday.com/story/news/nation/2019/08/21/mauna-kea-tmt-protests-hawaii-native-rights-telescope/1993037001/.

Miyares, Ines M. "Expressing "Local" Culture in Hawai'i." *Geographical Review*, vol. 98, no. 4, Oct. 2008, p. 513–531. JSTOR, www.jstor.org/stable/40377351?seq=1&cid=pdf-reference#references_tab_contents.

Sang, Kau'i. "History of Hawaiian education." *Hawai'i Department of Education*, www.hawaiipublicschools.org/TeachingAndLearning/StudentLearning/HawaiianEducation/Pages/History-of-the-Hawaiian-Education-program.aspx#.

Sawe, Benjamin E. "Largest School Districts in the United States." *World Atlas*, 25 Apr. 2017, www.worldatlas.com/articles/largest-school-districts-in-the-united-states.html.

"Secondary School Teacher Salary in Kahului, Hawaii." *Salary.com*, 2019, www.salary.com/research/salary/recruiting/secondary-school-teacher-salary/kahului-hi.

Schuler, Timothy A. "Why Hawaii Is No Paradise for Teachers." *CityLab*, The Atlantic Monthly Group, 31 Jan. 2017, www.citylab.com/life/2017/01/why-hawaii-struggles-to-hold-onto-teachers/514944/.

"Strive HI: Student Performance Report." *Department of Education: State of Hawaii*, 2016, www.hawaiipublicschools.org/DOE percent20Forms/StriveHI2016/StriveHIStudentGroups-state.pdf.

"Teacher Shortage Worsening; HSTA Advocates for Higher Pay." *Hawaii State Teachers' Association*, 16 Nov. 2018, www.hsta.org/News/Recent-Stories/teacher-shortage-worsening-hsta-advocates-for-higher-pay.

Vorsino, Mary. "Hawaii is scrambling to fill teacher vacancies. This analysis on

salaries won't help." *Hawaii News Now*, Mar. 2018, www.hawaiinewsnow. com/story/37746025/schools-are-in-the-midst-of-their-annual-hiring-blitz-this-analysis-on-hawaii-teacher-salaries-wont-help/.

Walker, Tim. "Hawaii Educators Tackle Teacher Shortage with Ambitious 5-Year Plan." *NEA Today*, 31 Jan. 2020, neatoday.org/2020/01/31/hawaii-educators-tackle-teacher-shortage-with-5-year-plan/.

Through a New Lens: Residential Segregation in Sioux City, Iowa, 1980–2010

A. Alexander Priest

Abstract

This paper examines methods used to measure residential segregation and the under-studied dynamic of Latinx segregation in micropolitan areas. The study explores residential segregation between non-Latinx Whites and Latinxs in Sioux City, Iowa between 1980 and 2010. Plots of both the Dissimilarity Index (D) and the Separation Index (S) are discussed, and segregation scores demonstrate change in residential segregation over time and highlight differences between the two indexes. Using both D and S shows that while residential segregation in Sioux City has decreased overall from 1980–2010, the remaining segregated areas are more segregated in 2010 than they were in 1980.

INTRODUCTION

This paper addresses two important gaps in research on residential segregation. First, this paper uses Sioux City Iowa to demonstrate two indexes of segregation: the Dissimilarity index (D) and the Separation index (S). Although the S index is not used as often as the D index, by using the S index this paper highlights how aspects of segregation may be overlooked if only the D index is used. Secondly, this paper also expands prior research on Latinx segregation in micropolitan areas, which have been overlooked in favor of metropolitan areas.

Despite the intuitiveness of the D index, which measures segregation by evaluating the evenness of a minority group's distribution across a region, there are several drawbacks to using it. The D index tends to overreport the level of segregation when measuring small spatial units and when there is a large, numerical imbalance between the groups. Furthermore, although the D index reports the numerical pervasiveness of segregation, because it focuses on the evenness of groups and not their exposure to one another, it lacks a more substantive interpretation on the severity of segregation (Fossett, 2011, 2017; Massey & Denton, 1988; Winship, 1977). The S index, which measures the exposure or contact between groups, can be a complementary measure to or substitution for the D index in studies concerned more with intergroup exposure than spatial arrangement. Although the use of multiple indexes in segregation research is not revolutionary, the use of both the D and S indexes to study segregation in a micropolitan community as well as the findings of this research are novel. By using both indexes, this paper analyzes segregation in Sioux City Iowa and showcases the importance of using the S index as a complementary measure to the D index.

According to the U. S. Census Bureau, only 6.4 percent of the U.S. population was Latinx in 1980 ("U.S. Census Bureau QuickFacts: Sioux City City, Iowa," 2019). By 2010, the percentage of people who reported being Latinx had increased by 154 percent to 16.3 percent of the total population. With future census projections predicting continued growth, research on the Latinx-American population will also continue to increase. Inevitably, a portion of this research will be devoted to residential segregation between Latinxs and other demographic populations. Most prior research focuses on shifting demographics in metropolitan cities (Lichter, 2012), or the increase in majority-minority states (having more ethnic or racial minorities than non-Latinx Whites) (Humes, Jones, and Ramirez, 2011).

The concentration of literature on metropolitan cities and larger populations has left a relative vacuum in literature studying micropolitan or rural areas throughout the United States. As a result, many micropolitan communities

are left out of the national debate on immigration and immigration policy's effects on their economies and social fabric, even though micropolitan communities are disproportionally affected by new minorities due to the larger population share they represent (Lichter, 2012; Hirschman and Massey 2008; Okamoto and Ebert 2010).

Using individual, block level census data from 1980 to 2010, D index and S index segregation scores were calculated for Sioux City, Iowa. Nestled in Northwest Iowa at the intersection of Interstate-129 and Intersate-29, Sioux City has an estimated population of 82,651 residents as of 2019, which broken down by race and ethnicity is 69.2 percent white, 4.3 percent Black, 19.1 percent Latinx, 3.5 percent Asian, and 5.6 percent other ("U.S. Census Bureau QuickFacts: Sioux City City, Iowa," 2019). Between 1980 and 2010, the D index reported an overall decrease in segregation, while the S index reported a substantial increase. According to the D index, fewer blocks (neighborhoods) are segregated in 2010 than in 1980. However, the substantive results from the S index show segregation in 2010 is more severe than in 1980. Although fewer blocks are segregated in 2010, they are more severely segregated than in 1980 due to less intergroup exposure.

Literature Review

Defining Residential Segregation

Massey and Denton (1988) defines residential segregation as "the degree to which two or more groups live separately from one another, in different parts of the urban environment" (p. 282). In contrast, parity is when the conditions of racial segregation are not present (Fossett, 2017). A common misconception is that a neighborhood is at parity when the majority and minority both represent 50 percent of the population. Parity is defined by the racial demographics of the city and varies from city to city (Fossett, 2017). In a theoretical city with a 60/40 majority-minority ratio, a neighbored composed of 50 percent majority and minority members would be considered segregated, while parity for that neighborhood would be equal to the city's 60/40 ratio.

Indicators of Residential Segregation

Contemporary methods of measuring residential segregation use five predominately accepted indicators: evenness, exposure, concentration, centralization, and spatial clustering (Massey and Denton, 1988).

Evenness evaluates the spatial distribution, often measured in areal units of a city, of a minority group relative to a larger majority (Massey and Denton, 1988; Blau, 1977). The most influential measure of segregation, evenness, is used in

several prominent measures of segregation, including the Dissimilarity index (Duncan and Duncan, 1955; Fossett, 2011; Massey and Denton, 1988; Weinberg, Iceland, and Steinmetz, 2017; Winship, 1977). Evenness is prominent in research because communities considered uneven often have indications of concentration, centralization, and spatial clustering. Because of this, concentration, centralization, and spatial clustering can be considered underneath the umbrella of evenness (Massey and Denton, 1988). Evenness is maximized and segregation is minimized when the proportion of majority to minority groups in a neighborhood is equal to that of the city as a whole (Massey and Denton, 1988). Evenness is minimized and segregation is maximized when neighborhoods are composed of only majority or minority members.

Concentration is the physical area, usually measured in block or track units, occupied by a group. Groups are considered segregated when they occupy only a small part of the total area of a region. Although there is potential for groups to naturally group together throughout a community, significant concentration is often caused by economic, social, or political forces (Massey and Denton, 1988).

Centralization is how a group is spatially positioned relative to the center of a city or other defining points. Groups that are heavily centralized often tend to be concentrated as well. Centralization is especially important when looking at residential segregation in the United States since minorities are often confined by economic or social pressures to declining urban cores (Farley et al., 1978; Massey and Denton, 1988; Yarmolinsky 1969). Detroit, Michigan is a particularly good example of how centralization contributes to residential segregation. In Detroit, minority Black residents are heavily confined to the city's struggling center while the majority White residents are spread out across the surrounding suburbs. However, centralization is not exclusive to one particular racial group or city (Massey and Denton, 1988).

Spatial clustering is the extent to which different racial/ethnic groups are spatially close together. Groups are considered segregated from the majority when an area has a high density of several different racial/ethnic enclaves (Massey and Denton, 1988). Spatial clustering is not a key contributor to the presence of residential segregation, but it does play an important role in determining the severity of segregation.

Exposure is the likelihood of contact, interaction, and shared spaces between the minority and majority groups. Evenness and exposure are related, but unlike concentration, centralization, and spatial clustering, exposure is theoretically distinct compared to evenness because evenness relies on comparing the relative size of two groups. Massey and Denton (1988) describe the relationship between evenness and exposure:

> *Minority members can be evenly distributed among residential areas of a city, but at the same time experience little exposure to majority members if they are a relatively larger proportion of the city[…] Conversely if they are a small proportion, minority members will tend to experience high levels of exposure to the majority no matter what the pattern of evenness. (p. 287)*

Although not as popular as evenness, the theoretical use of exposure as a measure of segregation has been known by researchers for some time and has more recently been utilized in the Separation index (S) (Fossett, 2011; Massey and Denton, 1988; Weinberg et al., 2017). When using exposure to measure a community's residential segregation, a minority group is considered segregated when a lack of exposure is found between the two groups (Massey and Denton, 1988). As an example, a community with two grocery stores, one with predominantly White shoppers and the other with Latinx shoppers, can be characterized as lacking exposure between the two groups; by going to separate stores, neither group of shoppers interacts with the other. Likewise, exposure is maximized and segregation is minimized when members of the minority and majority are exposed to each other at the level relative to their proportion of the population (Massey and Denton, 1988).

The importance of evenness, exposure, concentration, centralization, and spatial clustering lies in how they are factored into indexes of residential segregation. The use of evenness in the D index and exposure in the S index are most relevant to this study. Although the other three axes of segregation can be used as finer indicators of segregation, evenness and exposure should be given more weight because they are stronger indicators of substantial segregation (Massey and Denton, 1988).

Indexes of Segregation

In contemporary sociological literature, there are several indexes of segregation that attempt to quantify the presences and extent of racial/ethnic residential segregation into measurable and comparable numbers. Among these are the Dissimilarity Index (D) and the Separation Index (S). (Duncan and Duncan, 1955; Fossett, 2011, 2017; James and Taeuber, 1985; Massey and Denton, 1988; Weinberg et al., 2017). Although the S index is not as readily used compared to the D index, both are considered important in quantifying segregation.

The D index is a measure of the evenness of a minority across a region. The appeal of the D index comes from the simplicity of the formula and the applicability of the results, which makes it an especially compelling index for policy makers (Duncan and Duncan, 1955; Fossett, 2011, 2017; Massey and

Denton, 1988; Weinberg et al., 2017; Winship, 1977). In the 1970s, the D index was used widely to understand school diversity and the need for diversity bussing programs. Because of its popularity and historical influence on policy, the D index remains a popular choice among researchers (James and Taeuber, 1985; Reardon and Owens, 2014).

To calculate a segregation score, the D index compares the majority-minority ratio of a residential unit to the city's overall parity and considers those units that do not represent the city's parity as segregated. In a city with a 60/40 majority-minority parity, any neighborhood that does not have a 60/40 ratio is considered segregated no matter how small the deviation. Because D considers a neighborhood close to parity just as segregated as an enclave, when small spatial measurements like blocks are utilized, D is likely to exaggerate the severity of segregation. Although mathematically the neighborhoods are segregated, a high score on D suggests a city is strongly divided into two or more racial groups; in reality however, the city merely has many neighborhoods that are very close but not quite at parity (Fossett, 2011, 2017; Winship, 1977). Nonetheless, because of its extensive use throughout the past several decades, D is still the preferred method of measuring evenness throughout a city both in terms of accuracy and comparability to past studies (Fossett, 2011, 2017; Massey and Denton, 1988; Weinberg et al., 2017; Winship, 1977). D is measured on a range from 0–100, with 0 being no segregation and 100 being maximum segregation. The score of D represents the number of people, usually the minority group, that needs to be redistributed throughout neighborhoods so that all neighborhoods mirror parity (Duncan and Duncan, 1955; Fossett, 2011, 2017; Jakubs, 1977; Massey and Denton, 1988; Weinberg et al., 2017; Winship, 1977). In a city with a 60/40 majority-minority ratio, if D reports a score of 55, then 55 percent of the minorities throughout the city need to be redistributed to bring all neighborhoods back into line with the 60/40 parity. Although logistically and socially such movements are nearly impossible, such an example highlights the intuitiveness of using D.

While D is concerned with the evenness of a minority group's distribution, the S index is a measure of the amount of exposure between minority and majority groups. Also discussed in Duncan and Duncan (1955), the S index never saw the widespread use of the D index. Nonetheless, the S index has several compelling reasons for being used in this paper. Unlike the D index, the S index is not as susceptible to over reporting segregation when using small spatial units or unbalanced groups. The S index also expands our understanding of segregation by providing more substantive results than the D index. When calculated, the S index represents the severity of segregation (Fossett, 2011, 2017; Massey and Denton, 1988). The S index is an adaption of the Variance Ratio,

originally highlighted by Duncan and Duncan (1955), and argued for by later articles (Fossett, 2011, 2017; Massey and Denton, 1988). Although S is not as commonly used as D, it is just as intuitive and easy to interpret.

What causes S to truly stand out is its substantive interpretation of residential segregation (Fossett, 2011, 2017). As Fossett (2011) explains, "S registers the difference between one group's contact with another group and that group's contact with itself" (p.125). In the 60/40 majority-minority city, S uses the 60 percent majority group as the reference. In a neighborhood with a 30/50 majority-minority ratio, the minority group is considered segregated since they are 30 percent underexposed to the majority and 10 percent overexposed to themselves. Like D, S quantifies over- and underexposure by generating a segregation score ranging from 0–100, with 0 being no segregation and 100 being maximum segregation. Unlike D, which only considers neighborhoods segregated or at parity, S measures the magnitude from parity. Because S can decipher the difference between parity, close to parity, and enclaves, S provides substantive insight into the form segregation takes, dispersed or polarized (Fossett, 2017). Discerning the difference between dispersed and polarized segregation is crucial in drawing substantive conclusions about the severity of segregation. Therefore, S is a powerful tool for understanding how segregation affects everyday people and is a compelling complementary measure to D.

Latinx Segregation in Micropolitan Areas

Understanding residential segregation in Sioux City, Iowa, is about more than the methodological comparison of the D index and the S index. This paper is also about expanding research on Latinx segregation in micropolitan areas, which in the past have been overlooked in favor of metropolitan areas (Lichter, 2012) or the increase in majority-minority states (Humes et al., 2011). Micropolitan areas, especially those characterized with economic opportunities for low-skill labor, may experience a rise in their Latinx populations (Davidsson and Rickman, 2012; Lichter, 2012; Mulligan, 2014; Sharp and Lee, 2017). In particular, cities with meat processing and packaging plants across the Midwest are geographic hot spots for a growing Latinx population who are willing to do "dirty work" (Lichter, 2012). In a typical rather than exceptional case, Lichter (2012) focuses on Worthington, Minnesota. Between 1990 and 2010, the Latinx population of Worthington jumped from 4 percent of the population (392 people) to 35 percent (4,521 people) of the total population, an increase largely driven by the presences of a JBS USA (formerly Swift & Company) beef and pork processing plant.

For this study, Sioux City was chosen because of the city's relation and similarity to other sites in previous research as well as the city's potential as a templet

for future studies in other micropolitan cities. Like Worthington, Sioux City's Latinx population also rapidly grew from only 1.28 percent of the population in 1980 to 15.56 percent of the population in 2010. Furthermore, like Worthington, Sioux City's largest employer, Tyson Fresh Meats, which employs over 10 percent of the town's population, would also be considered "dirty work". In these ways, Sioux City is a typical and representative case of a midwestern, micropolitan city (Sioux City Finance Department, 2018, p. 154).

Despite falling behind metropolitan areas in terms of diversification, micropolitan and rural areas have the potential to feel the impact of diversification more intensely. Latinx immigrants, who might be undocumented or lack proficiency in English, gravitate towards these communities because of the low-skill jobs available. Many micropolitan communities find it difficult to integrate new immigrants into their existing social structures (Farmer and Moon, 2009; Lichter, 2012; Sharp and Lee, 2017). As such, the importance of research on demographic shifts in micropolitan communities, especially ones that approach segregation from multiple angles, should be recognized.

Data and Methods

Data

This study utilizes data from the U.S. Census Bureau's decennial censuses between 1980 and 2010, focusing on Non-Latinx Whites and Latinx individuals tabulated at the block-level. Block-level data were used rather than spatially larger block groups or census tracks because at larger spatial measurements some detail is lost on the pervasiveness of segregation, especially when looking at small populations. Between 1990 and 2000, the Census Bureau changed the way it categorizes racial and ethnic groups (Humes et al., 2011). Although this was taken into consideration, some individuals were possibly left out or misplaced when coding the data for this study. For Sioux City in 2010, the D index score using the census track is 55.03, the block group score is 55.63, and block level score is 67.41. Although each score was calculated using the same population in the same year, larger units of measure report less segregation. There is a 14-point difference between census tracks (the largest unit) and blocks (the smallest unit). Even in larger cities, where the difference between the two values is smaller, measuring at the block level will always report more segregation than at either the block group or census track level. In the case of Sioux City, an already small city with an even smaller Latinx population, using any level of measurement larger than block level would under-report or completely miss residential segregation.

Formulas

Dissimilarity Index: $D = 100 * \frac{1}{2}\Sigma |(\frac{n_{1i}}{N_1}) - (\frac{n_{2i}}{N_2})|$ (1)

Separation Index: $S = Y_1 - Y_2$ (2)

For every decennial census between 1980 and 2010, scores for both the D index and S index were calculated. Massey and Denton (1988) explains, "[D] measures departure from evenness by taking the weighted mean absolute deviation of every unit's minority proportion from the city's minority proportion and expressing this quantity as a proportion of its theoretical maximum" (p. 284). For the separation index, Y1 represents the mean exposure of individuals in group one with themselves. Y2 represents the mean exposure of individuals in group two with individuals in group one. Therefore, the S index is the difference between the mean exposure of group one with itself and group two with group one (Fossett, 2017).

Both scores were calculated for every decennial census to determine whether segregation is increasing or decreasing in Sioux City. The score trends and the total percentage change between 1980 and 2010 were compared to one another. Comparing the trends and their magnitude as percentage change highlights discrepancies or similarities between the two indexes.

RESULTS

Change in Racial Composition
Table 1 shows the demographic trends for Whites and Latinxs in Sioux City (see page 85). Between 1980 and 2010, Sioux City saw profound demographic changes. In 1980, Sioux City had an overwhelmingly White majority (98.3 percent) with a negligible Latinx population (1.28 percent). In 2010, Sioux City was 76.46 percent White and 15.56 percent Latinx. The White population decreased both numerically and as a proportion of the population every decennial census between 1980 and 2010, cumulating in a 22 percent overall decline. The Latinx population increased both numerically and as a proportion of the city for every decennial census, most notably between 1990 and 2010, resulting in a 1,116 percent overall increase. The decrease of White population and growth of the Latinx population is shown in Figure 1(see page 86).

In Figures 2 and 3, every block-like shape represents a census block no matter its spatial size. Blocks in shades of blue are majority White with darker shades of blue representing a higher proportion of Whites (55 percent, 70 percent, and 85 percent). Blocks in shades of green are majority Latinx with a

darker shade of green representing a higher proportion of Latinx (55 percent, 70 percent, and 85 percent). Blocks in yellow are mixed. Blocks in White have no data or no people living there. Figure 2 is Sioux City in 1990, and Figure 3 is as of 2010 (see pages 87 and 88). The differences between Figures 2 and 3 show how Sioux City is moving towards becoming a binary city composed of White and Latinx enclaves.

Change in Residential Segregation

For Sioux City in 1980, a neighborhood at racial / ethnic parity would be 98.30 percent White and 1.28 percent Latinx. By 2010, a neighborhood at parity would change to 76.46 percent White and 15.56 percent Latinx. The scores for the D index and S index are shown in Figure 4 (see page 89).

Dissimilarity Index (D)

In 1980, the D index reported a high segregation score of 73.24. The D index score represents the percentage of one group that needs to move to bring about parity. In 1980, this means that 73.24 percent of Latinxs or Whites would need to be moved to bring about parity. In 1990, the D index reported a high segregation score of 73.47. In 2000, the D index reported a high segregation score of 71.34. Finally, in 2010, the D index reported high segregation score of 67.41. With the exception of 1990, which saw a marginal increase of 0.23, each subsequent year saw a decrease in the segregation score. Between 1980 and 2010 the D index reported that segregation decreased by 7.9 percent, but segregation remained high overall.

Separation Index (S)

The S index score represents the degree to which two groups are segregated from each other by quantifying the exposure between two groups. In 1980, the S index reported a low segregation score of 13.78. In 1990, the S index reported a low to moderate segregation score of 21.61. In 2000, the S index reported a moderate segregation score of 38.37. In 2010, the S index reported a moderate to elevated segregation score of 41.91. In opposition to the D index, which reported a 7.9 percent decreased in segregation, the S index reported a 204.1 percent increase in segregation between 1980 and 2010. The S index highlights the shift from dispersed to polarized segregation.

In Figures 5 through 8, red represents Latinx residents and blue represents White residents. The solid line is the relative frequency of blocks (neighborhoods) that have a certain proportion of White residents. Still measuring proportion of Whites in the block, the dashed line is the mean, and the dotted line is the median. The grey line shows parity. The further from parity the mean

and median are, the more segregated the group. Figure 5 shows that in 1980, roughly 98 percent of Whites and 80 percent of Latinxs lived together in at least 90 percent White neighborhoods. Latinx majority neighborhoods are rare with less than 10 percent of Latinxs living in majority Latinx neighborhoods (see page 90). Figure 6 shows that in 1990, roughly 98 percent of Whites and 60 percent of Latinxs lived together in at least 90 percent White neighborhoods (see page 90). Latinx majority neighborhoods are more common with a portion of the Latinx population living in majority Latinx neighborhoods. Figure 7 shows that in 2000, roughly 90 percent of Whites and 20 percent of Latinxs lived together in at least 90 percent White neighborhoods (see page 91). In contrast to previous years, the majority of Latinx residents lived in mixed or Latinx majority neighborhoods. Figure 8 shows that in 2010, roughly 90 percent of Whites and less than 20 percent of Latinxs lived together in at least 90 percent White neighborhoods (see page 91). However, roughly 50 percent of Latinxs lived in at least 70 percent Latinx neighborhoods, and of those, almost 20 percent lived in roughly 90 percent Latinx neighborhoods.

Discussion and Conclusion

For every decennial census of Sioux City, the percentage of the White population declined, and the percentage of the Latinx population increased. This demographic trend was consistent throughout the four decades (1980-2010). Furthermore, two trends in segregation between Whites and Latinxs were identified. First, the D index shows that in 2010 (D index: 67) fewer people were segregated than in 1980 (D index: 73). Second, the S index showed that people who were segregated in 2010 (S index: 41) were more severely segregated than people in 1980 (S index: 13). Therefore, when synthesizing these two observations, in 2010, a lower percentage of neighborhoods were segregated, but the neighborhoods that were segregated were more highly segregated than those in 1980.

Figures 5 through 8 highlight the transition of segregation in Sioux City from dispersed to polarized. In 1980, although the majority of neighborhoods were not at parity, the majority of Whites and Latinxs were living in similar neighborhoods. While these neighborhoods were not at parity, they can be thought of as less severely segregated than more polarized ethnic enclaves. In 2010, the majority of neighborhoods were once again segregated, but unlike 1980, Whites and Latinxs were living in polarized ethnic enclaves characterized by distinct White and Latinx neighborhoods. Thus, in 2010, segregation in Sioux City can be described as significantly higher than in 1980 since the majority of neighborhoods moved from dispersed to polarized segregation. The

shift from dispersed to polarized segregation explains the discrepancy between the D index and S index. Because the D index only measures departure from parity, and not its magnitude, the D index reported that segregation was decreasing in Sioux City as more neighborhoods began to reflect parity between 1980 and 2010. However, because the S index measures the magnitude of segregation, dispersed or polarized, the S index reported segregation was becoming more severe as more neighborhoods moved from close to parity to polarized ethnic enclaves.

Using only the D index would have supported the wrong conclusion that segregation in Sioux City had improved because the D index reported fewer neighborhoods were segregating in 2010 than in 1980. By examining the more substantive results from the S index, it is clear that, despite the D index report, segregation in Sioux City is actually worse because ittransitioned from dispersed to polarized. Because of this, the S index should be considered a complementary and beneficiary measure to include alongside the D index and, in certain cases, could have the potential to replace it entirely.

The results of this study also have implications for the future of civic engagement and cooperation in Sioux City. As discussed in Stout, Harms, and Knapp (2012), as well as many other articles, communities are held together by social capital, which, like a web, weaves individuals and groups together to form the fabric of a community. Originally defined by Pierre Bourdieu, social capital is, "the aggregate of the actual or potential resources which are linked to possession of a durable network" (Bourdieu, 1986, p. 21). Since his original work was published, numerous researchers have gone on to refine Bourdieu's work and add to our understanding of social capital (Coleman, 1988; Granovetter, 1973; Lin, 2003; Small, 2009).

The study of social capital is often divided into the three types of social capital: bonding, bridging, and linking capital. Bonding capital is capital or ties often formed between close relationships (family, friends, or neighbors) within a homogenous group. It brings people together because of their strong similarity and sense of shared identity. (Aldrich, 2011; Aldrich and Meyer, 2014; Hawkins and Maurer, 2010). Bridging capital is capital or ties that are formed between lose or weak relationships across heterogeneous groups (i.e. different races or classes). Bridging capital brings different types of people and groups together often around a shared obstacle or objective (i.e. a political movement or public event) (Aldrich, 2011; Aldrich and Meyer, 2014; Hawkins and Maurer, 2010). Finally, linking capital is capital or ties formed between individuals and those organizations or people in power. An example of linking capital would be the connections formed between an individual or community and a non-profit organization or local political body (Aldrich, 2011; Aldrich and Meyer, 2014;

Hawkins and Maurer, 2010). Each form of social capital plays its own important role in forming the fabric of a community.

In the case of Sioux City, the rise of ethnic enclaves may support greater bonding capital within racial and ethnic groups at the expense of bridging capital between groups. As a result, ethnic enclaves may develop into communities within a community, effectively dividing Sioux City. Such a divide would impede civic engagement and cooperation that could benefit the entire community (Stout et al., 2012). Therefore, when studying segregation, research should consider the use of multiple indexes, such as the D and S indexes, to properly measure segregation and its impact on communities

Limitations and Future Research

A limitation to how this study conceptualizes segregation in Sioux City stems from how the United States' Census Bureau has defined and redefined questions on racial and ethnic groups. Prior to the year 2000, an individual could answer the census as a single racial group such as White, Black, and so on. However, starting in the year 2000, the Census Bureau changed how race was categorized. As such, for the 2000 and 2010 census, individuals could record themselves as multiple racial and ethnic categories (Humes et al., 2011). Therefore, in the data utilized by this study, an individual could have changed racial/ethnic groups between the years 1980 and 2010, negatively impacting the precision of the segregation indexes.

Another limitation of this study is its focus on a single research site. Although Sioux City is a strong representative case for other Midwestern, micropolitan cities, it is still only one city among many. Therefore, claims and future research on segregation and micropolitan cities should be cautious about making broad claims based on this study. In this specific case, the discrepancy between the S and D indexes highlighted the methodological advantage of including the S index alongside the D index. Without both indexes, this study would have come to the wrong conclusion about segregation in Sioux City and overlooked the formation of ethnic enclaves. However, it should not be inferred that the S index is always needed in conjunction with the D index or vice versa; however, the advantage to using multiple measures should be taken into consideration.

Furthermore, future studies should look toward expanding research into immigration and segregation in micropolitan areas throughout the Midwest and beyond. Because micropolitan communities have been historically overlooked by research in favor of metropolitan areas, micropolitan communities offer an understudied and important subject for future research. In the case of

Sioux City, future studies should also work towards better understanding the causal relationships that influence changes in demography and segregation in micropolitan areas. Finally, although this study is far from the first to use multiple measures, by continuing to stress the importance using of multiple indexes of segregation, future research on other cities and the methodology of residential segregation overall will be improved.

Table 1: Sioux City Demographic Changes, 1980–2010 Census

Year	1980	1990	2000	2010	Percent Change
% White	98.30%	92.96%	83.32%	76.46%	-22.00%
% Latinx	1.28%	2.89%	10.17%	15.56%	1116.00%

Figure 1: Percentage of Total Population Hispanic/Non-Hispanic White (1980-2010)
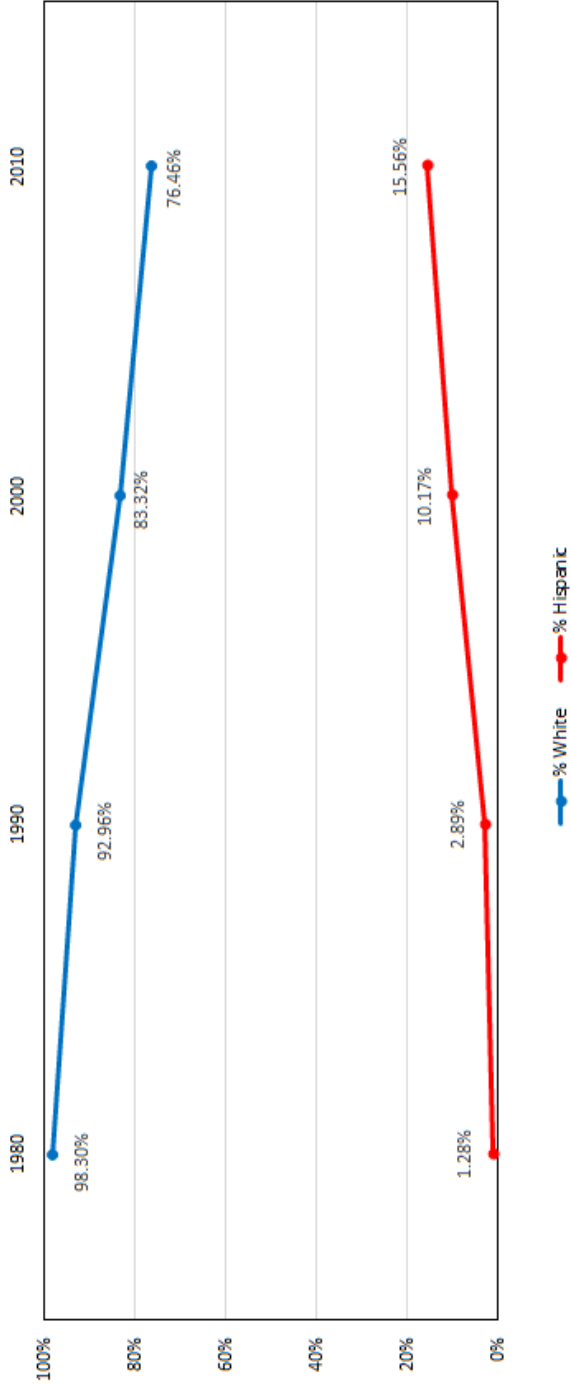
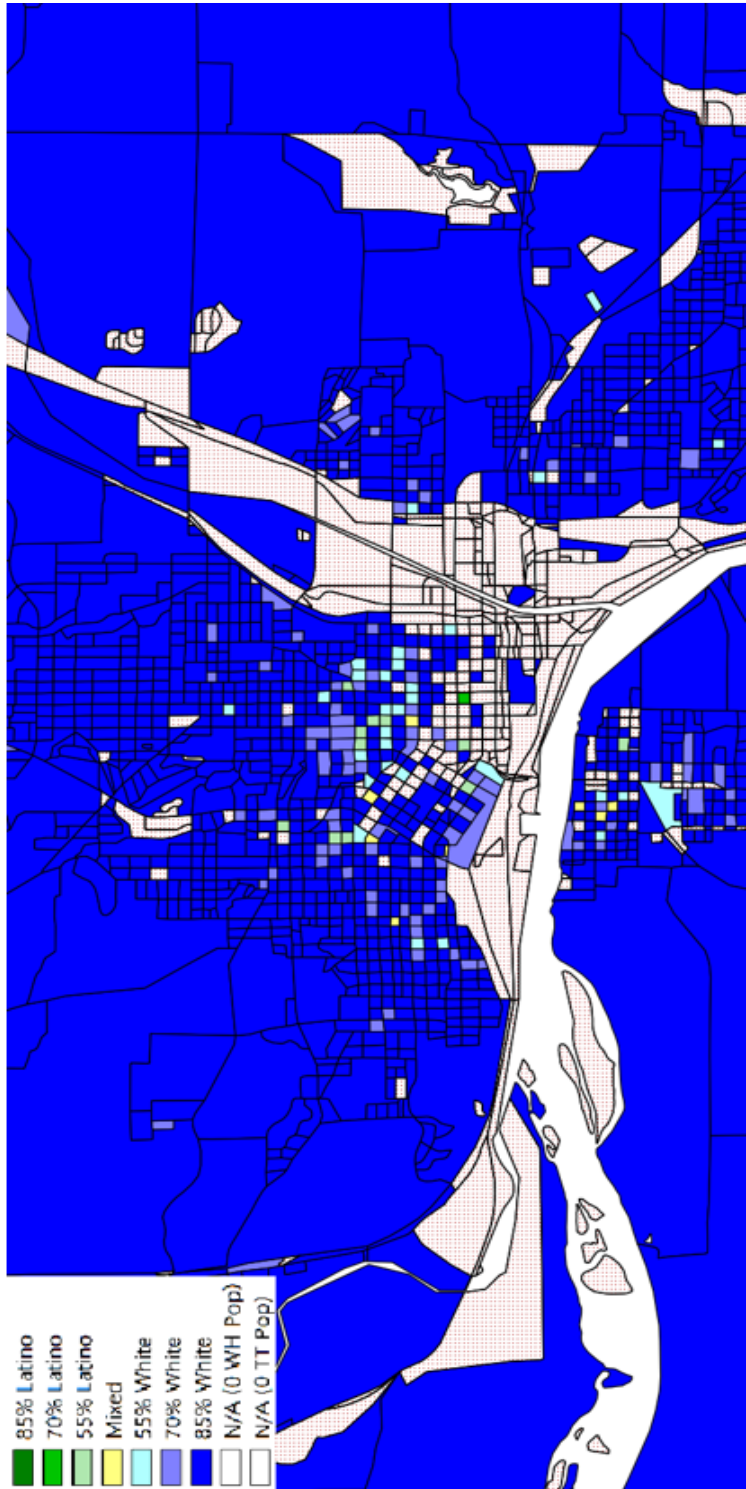*Figure 2:* Sioux City—Percentage White or Latinx by Block 1990

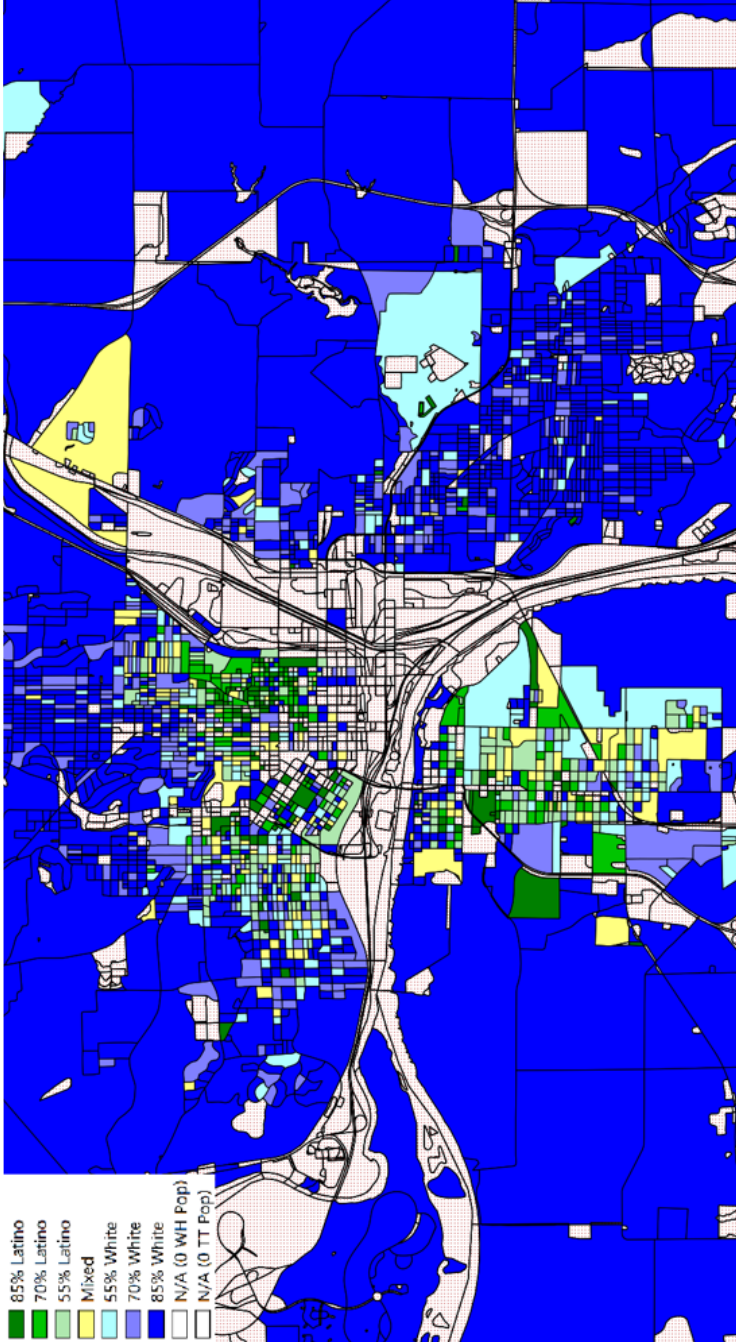**Figure 3:** Sioux City—Percentage White or Latinx by Block 2010

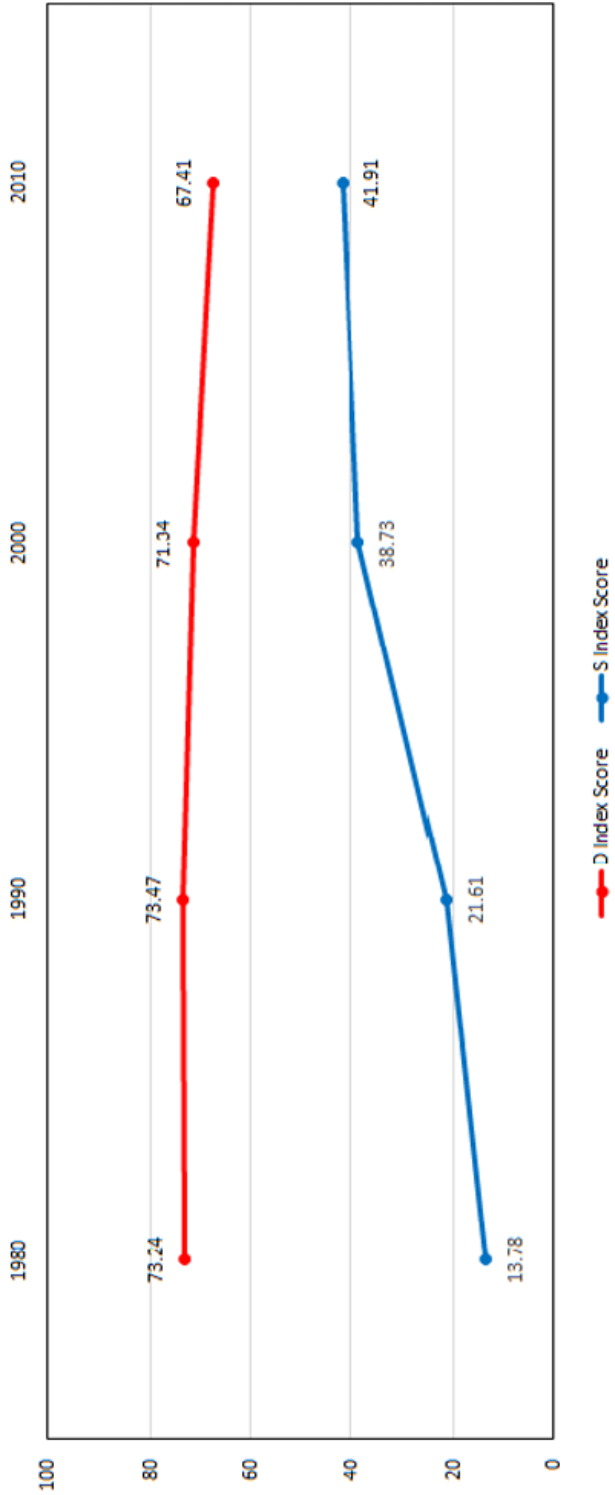*Figure 4:* D and S index scores from 1980 to 2010.

Notes: Standard S = 13.8 = (Y₁ - Y₂) = (98.9 - 85.1) for yᵢ = pᵢ based on area population. Dashed lines denote group means (thick) & medians (thin). (S_{P50} = 8.3, D = 73.2, P = 98.7.)
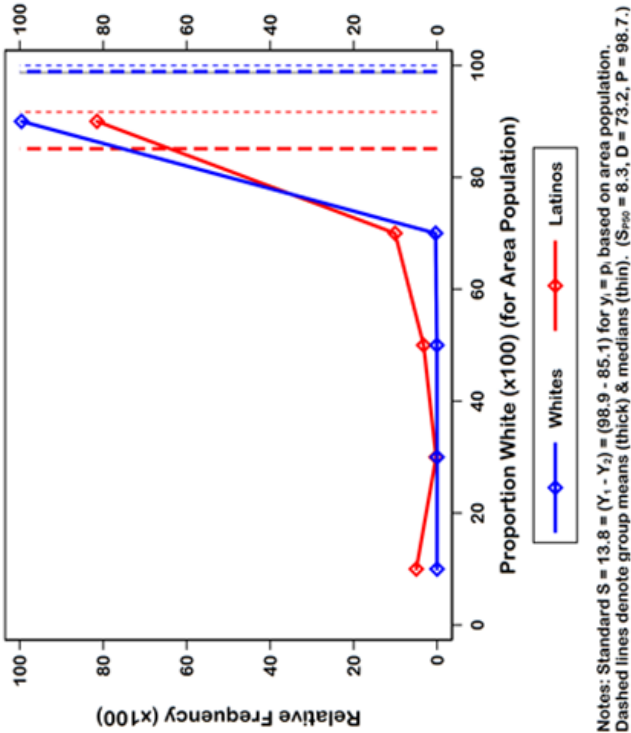
Figure 5: Group Distributions on Area Proportion White Comparing Whites and Latinos, Sioux City, IA, 1980

Notes: Standard S = 21.6 = (Y₁ - Y₂) = (97.6 - 76.0) for yᵢ = pᵢ based on area population. Dashed lines denote group means (thick) & medians (thin). (S_{P50} = 19.1, D = 73.5, P = 97.0.)

Figure 6: Group Distributions on Area Proportion White Comparing Whites and Latinos, Sioux City, IA, 1990

Notes: Standard S = 41.9 = (Y₁ - Y₂) = (90.2 - 48.3) for yᵢ = pᵢ based on area population. Dashed lines denote group means (thick) & medians (thin). (S₅₀ = 51.5, D = 67.4, P = 83.1.
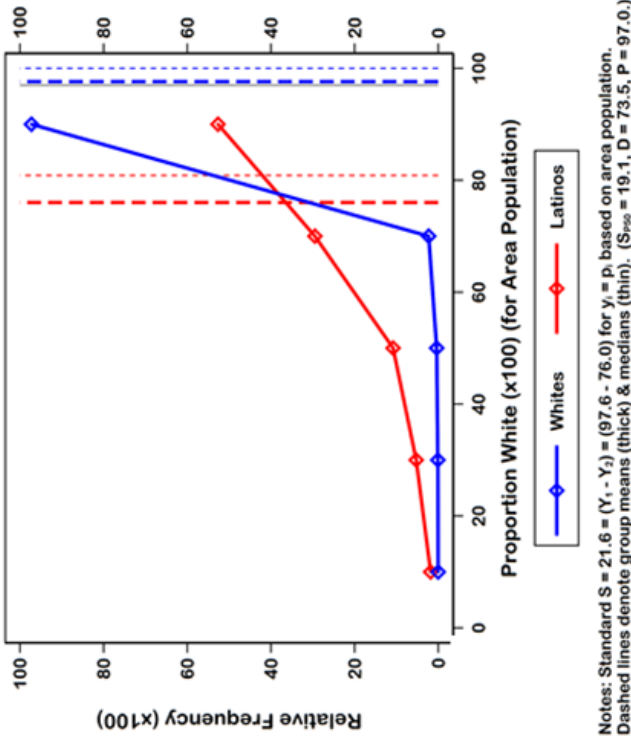
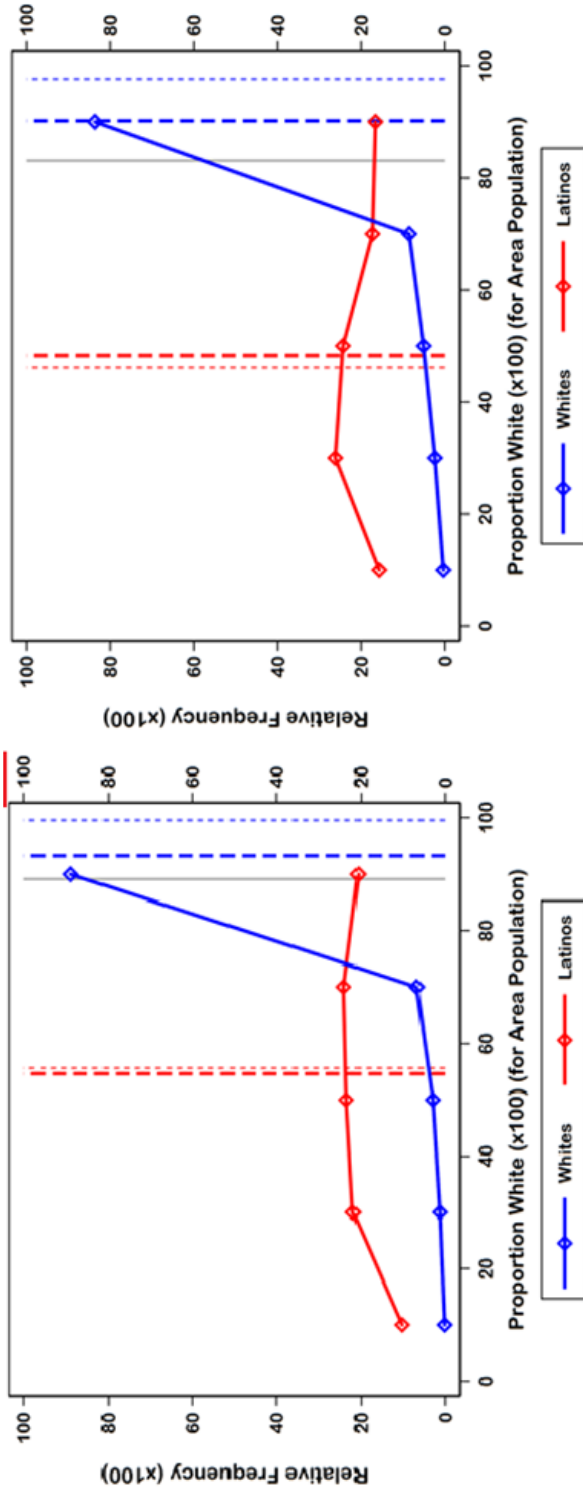*Figure 7:* Group Distributions on Area Proportion White Comparing Whites and Latinos, Sioux City, IA, 2000

Notes: Standard S = 38.7 = (Y₁ - Y₂) = (93.3 - 54.6) for yᵢ = pᵢ based on area population. Dashed lines denote group means (thick) & medians (thin). (S₅₀ = 43.9, D = 71.3, P = 89.1.

Figure 8: Group Distributions on Area Proportion White Comparing Whites and Latinos, Sioux City, IA, 2010

References

Aldrich, Daniel P. (2011). *Ties that bond, ties that build: Social capital and governments in post disaster recovery*. Vol. 4.

Aldrich, Daniel P., and Michelle A. Meyer. (2014). Social capital and community resilience. *American Behavioral Scientist*, *59*(2):254–69. https://doi.org/10.1177/0002764214550299

Blau, Petter M. 1979. Inequality and heterogeneity: A primitive theory of social structure. Vol. 442. *Sage Publications*, Sage CA: Thousand Oaks, CA. https://doi.org/10.1177/000271627944200146

Bourdieu, Pierre. (1986). The forms of capital. *Handbook of Theory and Research for the Sociology of Education*, pp. 241–258.

"U.S. Census Bureau QuickFacts: Sioux City City, Iowa." (2019). U.S. Census. Retrieved July 30, 2020 from https://www.census.gov/quickfacts/siouxcitycityiowa

Coleman, James S. (1988). Social capital in the creation of human capital. *American Journal of Sociology 94*:95–120. Retrieved from http://www.jstor.org/stable/2780243

Davidsson, Michael, and S. Dan Rickman. (2012). U.S. micropolitan area growth: A spatial equilibrium growth analysis. *The Review Of Regional Studies* (41):161–75, from https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=a9h&AN=89447600&site=ehost-live&scope=site

Duncan, Dudley, and Beverly Duncan. (1955). A methodological analysis of segregation indexes. *American Sociological Review 20*(2):210–17. DOI: 10.2307/2088328

Farley, Reynolds, Howard Schuman, Suzanne Bianchi, Diane Colasanto, and Shirley Hatchett. (1978). 'Chocolate City, Vanilla Suburbs:' Will the trend toward racially separate communities continue? *Social Science Research 7*(4):319–44. https://doi.org/10.1016/0049-089X(78)90017-0

Farmer, Frank L., and Zola K. Moon. (2009). An empirical examination of characteristics of mexican migrants to metropolitan and nonmetropolitan areas of the United States. *Rural Sociology 74*(2):220–40. https://doi.org/10.1111/j.1549-0831.2009.tb00390.x

Fossett, Mark. (2011). Generative models of segregation: Investigation model-generated patterns of residential segregation by ethnicity and socioeconomic status. *The Journal Of Mathematical Sociology 35*(1):114–15. https://doi.org/10.1080/0022250X.2010.532367

Fossett, Mark. (2017). *New methods for measuring and analyzing segregation*. 42nd ed. edited by K. Land. Gewerbestrasse 11, 6330 Cham, Switzerland: Springer Nature.

Granovetter, Mark. (1973). The strength of weak ties. *American Journal of Sociology 78*(6):1360–80, from http://www.jstor.org/stable/2776392

Hawkins, Robert L., and Katherine Maurer. (2010). Bonding, bridging and linking: How social capital operated in New Orleans following Hurricane Katrina. *British Journal of Social Work 40*(6):1777–93, from http://www.jstor.org/stable/43687571

Hirschman, Charles, and Douglas S. Massey. (2008). *New faces in new places: The changing geography of American immigration*. New York: Russell Sage Foundation.

Humes, Karen R., Nicholas A. Jones, and Roberto R. Ramirez. (2011). Overview of race and hispanic origin: 2010. United States Census Bureau. Retrieved from https://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf.

Jakubs, John F. (1977). Residential segregation: The Taeuber Index reconsidered. *Journal of Regional Science 17*(2):281–83. https://doi.org/10.1111/j.1467-9787.1977.tb00497.x

James, David R., and Karl E. Taeuber. (1985). Measures of segregation. *Sociological Methodology 15*:1–32. doi:10.2307/270845

Lichter, Daniel T. (2012). Immigration and the new racial diversity in rural America. *Rural Sociology 77*(1):3–35. https://doi.org/10.1111/j.1549-0831.2012.00070.x

Lin, Nan. (2003). Building a network theory of social capital. *Journal of Universal Computer Science 9*(6):501–9.

Massey, Douglas, and Nancy Denton. (1988). The dimensions of residential segregation. *Social Forces 67*(2):281–315. https://doi.org/10.2307/2579183

Mulligan, Gordon F. (2014). Employment change in micropolitan America: 1980–2000. *Southeastern Geographer 54*(4):348–65. https://doi.org/10.1353/sgo.2014.0033

Okamoto, Dina, and Kim Ebert. (2010). Beyond the ballot: Immigrant collective action in gateways and new destinations in the United States. *Social Problems 57*(4):529–58. https://doi.org/10.1525/sp.2010.57.4.529

Reardon, Sean F., and Ann Owens. (2014). 60 years after brown: Trends and consequences of school segregation. *Annual Review of Sociology 40*(1):199–218. https://doi.org/10.1146/annurev-soc-071913-043152

Sharp, Gregory, and Barrett A. Lee. (2017). New faces in rural places: Patterns and sources of nonmetropolitan ethnoracial diversity since 1990. *Rural Sociology 82*(3):411–43. https://doi.org/10.1111/ruso.12141

Sioux City Finance Department. (2018). City of Sioux City, Iowa Comprehensive Annual Financial Report Year.

Small, Mario Luis. (2009). Unanticipated gains: Origins of network inequality in everyday life. *Oxford University Press.*

Stout, Michael, D. Ph, John B. Harms, D. Ph, Tim Knapp, and D. Ph. (2012). Social capital and civic participation in the Ozarks : Summary of findings from the Ozarks Regional Social Capital survey. Missouri State University, Department of Sociology and Anthropology.

Weinberg, Iceland, and Steinmetz. (2017). Measurement of segregation by the U.S. Bureau of the Census in racial and ethnic residential segregation in the United States: 1980-2000. United States Census Bureau, pp. 1–9.

Winship, Christopher. (1977). A revaluation of indexes of residential segregation. *Social Forces 55*(4):1058–66. https://doi.org/10.2307/2577572

Yarmolinsky, Adam. (1969). Report of the National Advisory Commission on Civil Disorders. *Harvard Law Review*, pp. 1793–98 . Vol. 82. https://doi.org/10.2307/1339652

Gender Differences in the Effects of Socioeconomic Status on Episodic Memory among Older Adults

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Abstract

Though research has shown that socioeconomic status influences memory in later life, there is a paucity of research on how gender may shape the relationship between socioeconomic status and memory declines associated with advancing age. This study draws on data from the 2014 wave of the Health and Retirement Study (n = 8,614) and estimates a series of OLS regression models to examine how memory is impacted by income and education, two commonly used indicators of socioeconomic status. Moreover, this study examines how these direct effects are moderated by gender. Results indicate that women display better memory at older ages than men, while higher income and education are both associated with better memory. Additionally, we find evidence that gender moderates the relationship between education and memory such that men benefit more from education than women. There was no significant gender difference in the effect of income on memory. We end with a discussion of study strengths and limitations as well as directions for future research.

Introduction

As we age, declines in memory are expected to happen, so much so that memory loss and advancing age are often discussed simultaneously among lay-persons (Horhota et al., 2012). Social gerontologists and cognitive psychologists have long been interested in age-related changes in memory. Indeed, the subject of memory deficits among older adults remains a major area for cognitive aging theory and empirical research (Kunimi, 2016; Sliwinski et al., 2003).

A great deal of social science research has focused on the relationship between socioeconomic status (SES) and cognitive function in later life (e.g. Cagney and Lauderdale, 2002; Hackman et al., 2014). Specifically, studies assessing the effects of SES on cognitive function focus on education and income as two primary indicators. Moreover, previous research has shown that there are gender differences in memory declines among older adults, with women maintaining more intact memory in old age than men (Kunimi, 2016). Though research has explored how SES impacts age-related declines in memory and how memory is patterned across gender, it is not yet clear how gender may shape the relationship between SES and memory declines associated with advancing age. In this study, we expand on the research on memory loss by drawing on data from the 2014 wave of the Health and Retirement Study (HRS) and address the following question: does the effect of SES on age-related memory loss vary for men and women? This question is not only scientifically relevant in that it addresses a gap in the existing literature, but it is also socially important. Given that cognitive decline is a precursor to Alzheimer's disease and other dementias and given the rapidly growing older adult population in the U.S., it is imperative to understand the nuanced ways in which social characteristics such as socioeconomic status affect memory. Such an understanding could allow for policy to better help address the challenges faced by older adults.

Review of the Literature

Gender and Memory

As previously mentioned, there is some evidence for gender differences in memory at older ages. This finding seems to cut across various domains of memory. For example, in their study of associative memory declines in older age, Naveh-Benjamin and colleagues (2012) found significant gender differences in the relationship between advancing age and memory, with women performing better on memory tasks than men. Similarly, Kunimi (2016) found that older women outperform men in tasks designed to measure visual short-term memory. Though there is much evidence that women perform better on

memory tasks than men, there are some studies that show no difference. Seinstra, Grzymek, and Kalenscher (2015) examined whether there is a decline in episodic memory with normal aging. Though the researchers found no gender differences in base level of memory, they did find that men who have higher scores on memory have less declines over time. Though there are some studies that find no evidence for gender differences in memory decline, our review finds that these studies are in the minority. Thus, we conclude that gender is a notable factor when considering memory decline in older adults. Based on this information, we make the following two hypotheses regarding gender and memory:

Hypothesis Ia: Among older adults, women maintain a higher level of memory than men.

Hypothesis Ib: The gender difference in memory persists even when considering statistical controls.

SES and Memory

When thinking of how SES shapes memory, it is important to first discuss how SES should be measured. Mueller and Parcel (1981) explained that income, education, and occupation are three such ways in which SES can be captured in research studies. Education is a particularly important factor when it comes to memory, as it has shown to be a robust predictor of higher memory in later life (Schneeweis, Skirbekk, and Winter-Ebmer, 2014). While the mechanisms underlying the relationship between education and cognitive function are not fully understood, it has been argued that educational attainment aids in the buildup of cognitive reserve allowing older adults to remain cognitively able for longer periods of time (Wilson et al., 2019) Consequently, we form the following two hypotheses:

Hypothesis IIa: More years of education are associated with better memory among older adults.

Hypothesis IIb: The relationship between education and memory will persist even when considering statistical controls.

As for income, in an examination of SES on memory, Weng et. al. (2018) found a significant direct relationship between income and changes in cognition, with higher income predicting better memory. Similarly, Lyu and Burr (2016) found that the SES of older adults, (captured largely by household income), was predictive of memory, with lower household income associated with poorer memory. Given the strong associations between income and memory, we make the following two hypotheses:

Hypothesis IIIa: Higher income is associated with better memory among older adults.

Hypothesis IIIb: The relationship between income and memory will persist even when considering statistical controls.

Differential Effects of SES on Memory across Gender

Central to this paper is addressing whether or not the effects of education and income on memory is different for men than it is for women. There is a shortage of studies in the United States that have been done on this topic. In the Spanish context, Arrazola and Hevia (2006) found that benefits of income and education on memory are stronger for women. Simply put, women's memory benefits more from higher income and higher education than their male counterparts'. In contrast, another study drawing on data in the Philippines found no gender moderation in the effects of SES on memory (Sakellariou, 2004). However, it is important to note that the aforementioned study suffered from a small sample size, so there was likely not enough statistical power to detect a significant interaction. Based on the existing evidence and our assessment of the quality of the two studies mentioned above, we formulated the following hypotheses:

Hypothesis IVa: The relationship between education and memory is shaped by gender such that the said relationship is stronger for women.

Hypothesis IVb: The relationship between income and memory is shaped by gender such that the said relationship is stronger for women.

Data and Methods

Sample

Data for this study come from the 2014 wave of the Health and Retirement Study (HRS), a nationally representative and longitudinal study of non-institutionalized Americans aged 50+. The HRS is funded by the National Institute on Aging (grant number NIA U01AG009740) and is conducted by the University of Michigan's Survey Research Center. Initiated in 1992, the HRS is administered biennially and includes extensive information on the health, psychosocial environment, socioeconomic status, and employment factors among older adults in the United States. All surveys are conducted either in-person or via telephone.

To ensure a representative sample of the U.S. older adult population, the HRS employs a multi-stage national area probability sample design. During the first stage, U.S. Metropolitan Statistical Areas (MSAs) and non-MSA counties were selected using probability proportionate to size (PPS). Second, area segments were selected from the sampled primary sampling units (PSUs). Third, once a complete enumeration of all the housing units within the boundaries

of the identified area segments is completed, housing units are selected systematically. The fourth, and last stage consists of the selection of the specific household financial unit. Additionally, the HRS includes an oversampling of blacks and Latinos, who are typically unrepresented in national surveys, as to ensure adequate numbers of members of these groups.

The HRS is highly appropriate for the present analysis for several reasons. First, the coverage of older Americans across a wide age range and across several assessments allows us to assess individual changes in cognitive functioning over time. Second, in addition to containing an extensive battery of cognitive tests that tap into key domains of cognition like memory, the HRS also includes several SES indicators. Lastly, because of the sampling strategy employed, results can be generalized to the target population. To extract the data, we relied on the RAND HRS Data file, an easy to use longitudinal data set based on the HRS data, as well as data "fat files" found on the HRS website. Our analytic sample consists of respondents, aged 50+, who did not require a proxy interview and who did not have missing data on any of the variables of interest nor required a proxy interview. This leaves us with an analytic sample of 8,614 older adults. Because we drew on publically available secondary data, we were exempt from IRB review.

Measures

Episodic Memory

For this study, episodic memory serves as the dependent variable. This variable was constructed by drawing on two tasks used to assess memory in the HRS: the Immediate and Delayed Word Recall tasks. In 2014, the Immediate Word Recall task calls for the respondent to recall a list of 10 nouns immediately after hearing the full list of nouns from the interviewer. The interviewer cycled between 4 lists which consisted of different words across subsequent waves in order to minimize recall bias. The Delayed Word Recall task had the respondent recall the words 5 minutes after hearing the interviewer read the full list of nouns. The Delayed Word Recall is the same as the Immediate Word Recall except there is a delay of about 5 minutes between the reading of the list of words and calling for the respondent to recall the words. Each task is scored from 0–10, with the score reflecting the number of words successfully recalled. To arrive at our measure, we summed the Immediate and Delayed Recall tasks to create a word recall index with scores ranging from 0–20. Higher values indicate better episodic memory.

Focal Independent Variables

Gender, education, and income serve as the key focal independent variables

in the present analysis. Gender is a binary variable coded "1" for women and "0" for men. Years of education (0–17) is treated as a continuous measure denoting how many years of formal schooling the respondent has completed. Income takes the logarithm of the respondent's reported earnings in 2014.

Control Variables

Several additional covariates that capture health and health behavior were included in the model given their documented association with cognitive functioning (Cadar et al., 2012; Zelinski et al., 1998). Number of chronic conditions was treated as a continuous variable and represented the number of self-reported chronic diseases (arthritis, cancer, diabetes, heart disease, hypertension, lung disease, psychological disorders, and/or stroke). Body mass index (BMI) was calculated using respondents' self-reported height and weight and the standard CDC formula. We then treated BMI as a categorical variable using CDC cutoffs to indicate if a respondent was normal weight (BMI < 25) coded "1", or overweight/obese (BMI 25.0-29.9; BMI≥30) coded "0." These two measures tap into the overall health of the respondent. To capture health behaviors, we included smoking and drinking, both as categorical variables. Smoking status was constructed using responses to inquiries into whether a respondent ever smoked. "Never smokers" were coded "0", while individuals who "ever smoked" were coded "1." Similarly, drinking status indicated whether respondents have ever drank (coded "1") and those who never drank (coded "0").

In addition to including health and health behavior controls, we included two sociodemographic controls. Age is highly predictive of memory deficits and is included as a continuous variable ranging from 50–105. Because research has highlighted the relationship between marital status and cognitive function (see Hakansson et al., 2009), we also adjust for this, with married or partnered respondents coded "1" and not married or partnered respondents coded "0." While we acknowledge that the marital status variable could be broken down further to designate widows/widowers, divorcees, and those never married, such a breakdown would greatly limit statistical power.

ANALYTIC STRATEGY

The present analysis proceeded in several steps. First, we generated descriptive statistics of the analytic sample on all variables of interest. Survey weights were used to account for oversampling. The weighted descriptive statistics can be found in *Table 1* and provide a test for Hypothesis Ia (see page 107). Next, we used Ordinary Least Squares (OLS) regression to test our remaining research hypotheses. In estimating our regression models, we performed an iter-

ative analysis, with Model I including episodic memory regressed on gender, education, and income, which provide tests for Hypotheses Ib, IIa, and IIIa. Model II includes statistical controls and thus represents our fully adjusted models, which test Hypotheses IIb and IIIb. To test the moderating effects of gender on the effects of SES (Hypotheses IVa and IVb) in Model III, we estimated a regression model that includes education by gender and income by gender interaction terms. Regression models are displayed in *Table 2* (see page 108). Lastly, we provide visual depictions of statistically significant interaction terms in *Figure 1* (see page 109). All analyses conducted were estimated using Stata 15 and utilized survey weights provided by the RAND dataset.

Results

Descriptive Statistics

   Table 1 shows weighted descriptive statistics stratified by gender. We show proportions for categorical variables and mean values and standard error for continuous variables for the entire sample. There was a statistically significant difference between men and women with regard to memory, with women demonstrating better memory than their male counterparts (11.30 for women and 10.34 for men; p < 0.001). Thus, we found support for Hypothesis Ia. With regard to education and income, we found statistically significant gender difference in both measures, with men reporting more years of education than women (14.19 years vs. 13.96 years) and also a higher amount of income (8.58 vs. 8.12 logged dollars).

   Moving on to demographic characteristics of the respective samples of men and women, we found no differences in racial/ethnic composition. However, women in the sample were found to be older (67.29 years old vs. 66.47 years old) and were less likely to be married/partnered than men (63.89% vs. 78.2%)\. Lastly, when considering health conditions, there was no difference between women and men with regard to reported number of chronic conditions (p = .905). We did find that men were more likely to be overweight/obese, to be more likely to have ever smoked, and to be more likely to have ever drank. These differences were all statistically significant.

Multivariate Analyses

   Coefficients from OLS regression models are displayed in *Table 2*. Model I tests Hypothesis Ib, IIa and IIIa. Consistent with the descriptive statistics in *Table 1*, we found that men exhibited poorer memory than women. Moreover, this gender difference holds even after considering years of education

and logged income. Thus, we find support for Hypothesis Ib. We also find statistically significant relationships between education, logged income, and memory. The higher an older adult's SES, as indicated by education and logged income, the better their memory scores. These results provide strong support for Hypotheses IIa and IIIa.

Next, Model II incorporates all statistical controls and tests the robustness of the direct relationships between education, and income and memory. Essentially, this model tests Hypotheses IIb and IIIb. As the regression results indicate, the statistically significant direct relationships between education, logged income, and memory persists even when accounting for all statistical controls. While there is some attenuation as reflected by the change in the coefficients for education and logged income when moving from Model I to Model II, the amount is negligible.

Last, Model III provides estimates for a fully adjusted regression model that includes both gender *x* years of education and gender *x* income interaction terms. In interpreting results from this model, we will focus solely on the point estimates and significance tests for the interaction terms. As *Table 2* Model III shows, we found a statistically significant interaction between gender and education, providing evidence that the effect of education on episodic memory is different for men and women. Given the positive gender interaction combined with the direction of the education and gender main effect coefficients, the results indicate that the relationship between education and memory is stronger for men than women. This is inconsistent with Hypothesis IVa in which we predict a stronger relationship for women. *Figure 1* provides a visualization of the interaction between gender and years of education. Note that the slope for men is steeper than the slope for women. This indicates that men gain more from an increase in education than women do. It is worth mentioning that while the slope, and thus the education effect, is stronger for men, women maintain a higher memory across education levels. No statistically significant gender and income interaction was found, thus Hypothesis IVb received no support.

Discussion

In this paper, we draw on data from the 2014 wave of the HRS to test the relationship between SES and memory and examine whether this relationship varies by gender. In sum, this research seeks to address a gap in our understanding: namely whether gender conditions the effect of various determinants of cognitive functioning in later life. The present analysis tested several

hypotheses. *Table 3* presents a summary of these hypotheses and indicates which hypotheses received support.

As a summary of findings, our results indicate that women display better memory at older ages than men, while higher income and education are both associated with better memory, net of statistical controls. Additionally, we find evidence that gender moderates the relationship between education and memory such that men experience a greater return to education than women. We found no evidence that gender conditions the relationship between income and memory.

We were somewhat surprised by the finding that the returns of education are stronger for men than they are for women. A possible explanation for this finding is that women are inherently better at verbal recall tasks, and that gains in education have a weaker relationship with better memory (Sundermann et al., 2016). Conversely, men who tend to demonstrate better performance on spatial tasks (Levine et al., 2016) may benefit more from increases in education. It is also possible that education serves as a proxy for professional attainment for men in a way that it is not true for women. It is important to unpack these findings to identify potential mechanisms leading to the effects of gender on memory.

Results of this study should be viewed through the lens of both its strengths and limitations. One major strength of the present study is that it draws on a large, representative sample of older adults in the U.S. Given the large number of men and women who completed the survey in 2014, we were able to stratify the sample by gender while still maintaining the statistical power to detect effects. Next, because the HRS provides several sociodemographic and health measures, we were able to control for multiple variables to better identify the role of gender, education, and income plays on memory beyond other factors important for cognition. Furthermore, we used a validated measure of memory, namely, word recall.

Conclusion

This study is not without some limitations. First, we conducted cross-sectional analyses; therefore, we can only assess the impact of education and logged income on memory at one point in time. Future research should assess multiple waves of data to assess how education and income may impact memory among older adults. Second, this study employed complete case analysis, thus removing all cases of missing data from the analysis. Because the HRS patterns of missingness are not random, that is to say, because

those who complete the study are categorically different than those who do not complete the study, are missing, our results are likely not generalizable beyond respondents who possess the characteristics related to them being likely to complete the full survey. To address this, we would need to rely on imputation techniques to address missing responses (Allison, 2002). Lastly, while this study focused on memory, there are a various domains of cognition worth exploring. Future studies should examine other indicators of cognitive functioning.

Future Research

As previously mentioned, our finding that men receive more of a benefit from education on their memory in old age is somewhat surprising and warrants more attention. Future research should explore the mechanisms underlying the relationship between years of education and memory and how said mechanisms may operate differently for men and women. What is it about years of education that matters? Does the quality of education matter? What about school characteristics? Moreover, what does education mean for men and for women? Does education represent a type of status attainment for men that does not appear for women? Future research is needed to address these important questions. Additionally, future studies should leverage the longitudinal nature of the HRS to claims of causality. Next, future research should also connect the current finding to the broader literature on gender differences in cognition and mental abilities. Lastly, though we have explored the moderating role of gender, it would be interesting to examine how race and ethnicity may shape the relationship between SES and memory.

Table 1: Weighted Descriptive Statistics by Gender, Health and Retirement Study, 2014

Variable	Women (n=4,819)	Men (n=3,906)	
Focal Dependent Variable			
Episodic Memory Score	11.30 (0.06)	10.34 (0.07)	***
Focal Independent Variables			
Years of Education	13.96 (0.04)	14.19 (0.05)	***
Logged Income	8.12(0.06)	8.58(0.07)	***
Statistical Controls			
Race/Ethnicity (%)			
Non-Hispanic Whites	89.64	89.46	
Non-Hispanic Blacks	5.84	5.77	
Hispanics, any Race	4.51	4.77	
Age	67.29 (0.16)	66.47 (0.16)	***
Number of Chronic Conditions	1.98 (0.02)	1.98 (0.03)	
BMI (%)			
Normal Weight	36.46	23.39	***
Overweight/Obese	63.54	76.61	***
Smoking Status (%)			
Ever Smoked	8.49	10.36	*
Never Smoked	91.51	89.64	*
Drinking Status (%)			
Ever Drank	63.01	72.4	***
Never Drank	36.99	27.59	***
Marital Status (%)			
Married/Partnered	63.89	78.2	***
Single	36.10	21.79	***

Note: Standard errors of means in parentheses
* $p<.05$
** $p<.01$
*** $p<.001$

Table 2: OLS Coefficients for Weighted Linear Regression of Memory on Focal Variables, Health and Retirement Study, 2014.

(n=8,614)	Model I	Model II	Model III
Men	-1.07*** (.09)	-1.22*** (.08)	-2.25*** (.52)
Years of Education	0.39*** (.09)	0.29*** (.02)	0.25*** (.02)
Logged Income	0.04** (.01)	0.02* (.01)	0.03 (.02)
Statistical Controls			
Race/Ethnicity			
Non-Hispanic Whites (reference)			
Non-Hispanic Blacks		-1.17*** (0.14)	-1.16*** (0.14)
Hispanics, Any Race		-0.71** (0.21)	-0.72** (0.21)
Age		-0.12*** (0.00)	-0.12*** (0.00)
Number of Chronic Conditions		0.14*** (0.03)	0.14*** (0.03)
BMI			
Normal Weight (reference)			
Overweight/Obese		0.17 (0.09)	0.16 (0.09)
Smoker		-0.42** (0.14)	-0.42** (0.14)
Drinker		0.32*** (0.09)	0.33*** (0.9)
Married/Partnered		0.29** (0.09)	0.29** (0.09)
Interactions			
Gender x Education			0.08* (0.04)
Gender x Income			-0.01 (0.05)

Note: Standard errors in parentheses
* *p*<.05
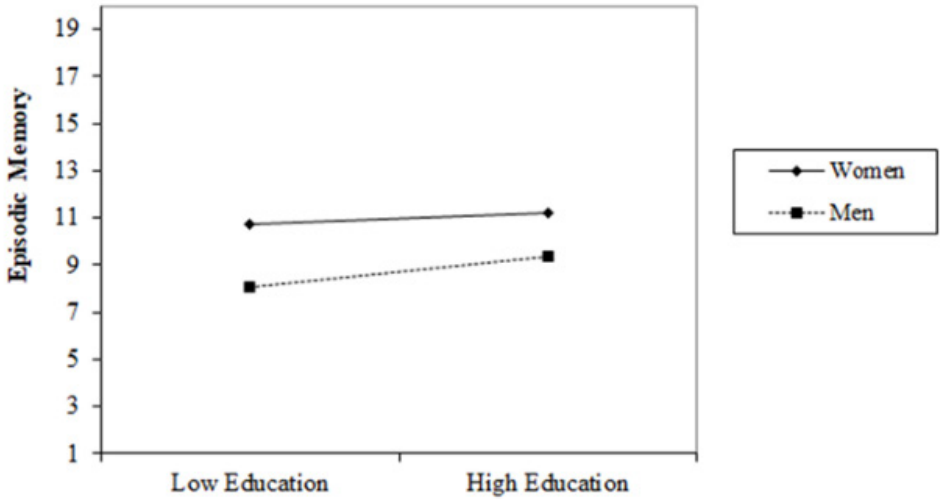** *p*<.01
*** *p*<.001

Figure 1: Visual Display of Gender *x* Education Interaction.

Table 3: Summary of Hypotheses and Findings, Present Analysis Using 2014 Wave of the Health and Retirement Study

		Support [Y/N]
Hypothesis Ia	Women display better memory than men	Y
Hypothesis Ib	Women display better memory than men net of education and income	Y
Hypothesis IIa	More years of education is predictive of better memory	Y
Hypothesis IIb	More years of education is predictive of better memory net of statistical controls	Y
Hypothesis IIIa	More income is predictive of better memory	Y
Hypothesis IIIb	More income is predictive of better memory net of statistical controls	Y
Hypothesis IVa	The effect education has on memory is stronger for women than for men	N*
Hypothesis IVb	The effect income has on memory is stronger for women than for men	N

Note: * indicates hypothesis predicts wrong direction of relationship

References

Allison, Paul D. (2002). *Missing data: Sage University Papers Series on quantitative applications in the social sciences.* Thousand Oaks, CA: Sage.

Arrazola, Maria and Jose De Hevia. (2006). Gender differentials in returns to education in Spain. *Education Economics 14*(4):469–486. https://doi.org/10.1080/09645290600854151

Cadar, D, H. Pikhart, G. Mishra, A. Stephen, D. Kuh, and M. Richards. (2012). The role of lifestyle behaviors on 20-year cognitive decline. *Journal of Aging Research* (2012):1–13. https://doi.org/10.1155/2012/304014

Cagney, Kathleen A,. and Diane S. Lauderdale. (2002). Education, wealth, and cognitive function in later life. *Psychological Sciences 57B*(2):163–172. https://doi.org/10.1093/geronb/57.2.P163

Hackman, Daniel A,. Laura M. Bentancourt,. Robert Gallop,. Daniel Romer,. Nancy L. Brodsky,. Hallam Hurt,. Martha J, Farah. (2014). Mapping the trajectory of socioeconomic disparity in working memory: Parental and neighborhood factors. *Child Development 85*(4):1433–1445. https://doi.org/10.1111/cdev.12242

Hakansson, Krister, Suvi Rovio, Eeva-Liisa Helkala, Anna-Riitta Vilska, Bengt Winblad, Hikka Soininen, Aulikki Nissinen, Abdul H. Mohammed, and Mila Kivipelto. (2009). Association between mid-life marital status and cognitive function in later life: Population-based cohort study. *BMJ 2009*(339):1–8. https://doi.org/10.1136/bmj.b2462

Horhota, Michelle,. Tara Lineweaver,. Monique Ositelu,. Kristi Summers,. And Christopher Hertzog. (2012). Young and older adults' beliefs about effective ways to mitigate age-related memory decline. P*sychology and Aging 27*(2):293–304. https://doi.org/10.1037/a0026088

Kunimi, Mitsunobu. (2016). Effects of age, gender, and stimulus presentation period on visual short-term memory. *Journal of Women and Aging 28*(1):24–33. https://doi.org/10.1080/08952841.2014.950499

Levine, Susan C., Alana Foley, Stella Lourenco, Stacy Ehrlich, and Kristin Ratliff. (2016). Sex differences in spatial cognition: Advancing the conversation. *WIREs Cognitive Science 7*:127–155. https://doi.org/10.1002/wcs.1380

Lyu, Jiyoung and Jeffrey A. Burr. (2016). Socioeconomic status across the life course and cognitive function among older adults: An examination of the latency, pathways, and accumulation hypotheses. *Journal of Aging and Health 28*(1):40–67. DOI: 10.1177/0898264315585504

Mueller, Charles W,. and Toby L. Parcel. (1981). Measures of socioeconomic status: Alternatives and recommendations. *Child Development 52*(1):13–30. https://doi.org/10.2307/1129211

Naveh-Benjamin, Moshe,. Geoffrey B. Maddox,. Peter Jones,. Susan Old. and Angela Kilb. (2012). The effects of emotional arousal and gender on the associative memory deficit of older adults. *Memory and Cognition 40*(4):551–566. https://doi.org/10.3758/s13421-011-0169-x

Sakellariou, Chris. (2004). The use of quantile regressions in estimating gender wage differentials: A case study of the Philippines. *Applied Economics 36*(9):1001–1007. https://doi.org/10.1080/0003684042000233230

Schneeweis, Nicole,. Vegard Skirbekk, and Rudolf Winter-Ebmer. (2014). Does education improve cognitive performance four decades after school completion? *Demography 51*(2):619–643. https://doi.org/10.1007/s13524-014-0281-1

Seinstra, Maayke,. Katharina Grzymek,. and Tobias Kalenscher. (2015). Gender-specific differences in the relationship between autobiographical memory and intertemporal choice in older adults. *PLos ONE 10*(9):1–22. https://doi.org/10.1371/journal.pone.0137061

Sliwinski, Martin J,. Scott M. Hofer,. Charles Hall,. Herman Buschke,. and Richard B. Lipton. (2003). Modeling memory decline in older adults: The importance of preclinical dementia, attrition, and chronological age. *Psychology and Aging 18*(4):658–671. https://doi.org/10.1037/0882-7974.18.4.658

Sundermann, Erin E., Pauline M. Maki, Leah H. Rubin, Richard B. Lipton, Susan Landau, and Anat Biegon. (2016). Female advantage in verbal Memory. *Neurology 87*:1916–1924. doi: 10.1212/WNL.0000000000003288

Weng, Pei-Hsuan,. Jeng-Min Chiou,. Yu-Kang Tu,. Ta-Fu Chen,. Ming-Jang Chiu, Sung-Chun Tang,. Shin-Joe Yeh,. and Yen-Ching Chen. (2018). The effect of lifestyle on late-life cognitive change under different socio-economic status. *PLoS One 13*(6):1–15. https://doi.org/10.1371/journal.pone.0197676

Wilson, Robert S., Lei Yu, Melissa Lamar, Julie A. Schneider, Patricia A. Boyle, and David A. Bennett. Education and cognitive reserve in old age. *Neurology 92*(10): 1041–1050. DOI: 10.1212/WNL.0000000000007036

Zelinski, Elizbeth M., Eileen Crimmins, Sandra Reynolds, and Teresa Seeman. (1998). Do medical conditions affect cognition in older adults? *Health Psychology 17*(6): 504–512. DOI: 10.1037//0278-6133.17.6.504

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