ABSTRACT

LASSITER, SCOTT RILEY. Educator Perceptions of Virtual Reality Bias Identification Training and Bystander Intervention Techniques. (Under the direction of Dr. Michael E. Ward, Chair).

A substantial body of research supports the presence of bias within the United States public education system, along with its adverse effects on student outcomes. Moreover, emerging technologies, like virtual reality (VR) sessions, have been studied and have demonstrated promising results in workplace training. Initially, VR training primarily focused on hard skills. The technology was used in applications such as flight simulators and heavy equipment operation simulations. However, recent research has highlighted the potential of VR training for soft skills in multiple work contexts, including human resource training and customer service interactions. Furthermore, limited studies have shown the benefits of VR training in contexts such as assisting medical students in understanding bias and helping teachers respond to stressful situations. While relevant literature and theoretical frameworks like Punctuated Equilibrium Theory and Dual Process Theory inform the expansion of workplace anti-bias training and the understanding of the implicit nature of bias, there is a lack of formal research that explores the intersectionality of VR training and educator preparedness training, especially concerning bias identification and remediation training for educators. This study sought to address that gap by examining the applicability of such training.

This study investigated the perceptions of in-service professional educators concerning bias as a general concept and their reactions to a VR training module designed to expose them to biased workplace interactions and introduce bystander intervention techniques. The participants represented various generations, genders, ethnicities, grade levels, and roles within the educational system. After participating in the VR training, they were interviewed to gain insights

into their perceptions of bias in schools and any perceived impact the training may have had on their professional practices or its potential benefits for their colleagues. The results were analyzed for recurring themes that address the research questions.

The participating educators shared several key perceptions with the researcher. They universally noted that the VR platform significantly enhanced engagement compared to more static training methods they had experienced previously. Most participants found value in the VR experience as it allowed them to develop empathy for the individuals in the simulation who were facing bias. Many participants expressed the belief that the VR experience had the potential to positively influence their professional practices or those of their peers. Additionally, participants overwhelmingly emphasized the high perceived importance of understanding, mitigating, and addressing bias in schools due to the multitude of negative effects they have witnessed or envisioned it causing to students.

The study results also revealed that participating educators tended to deflect responsibility for bias in schools to other educators. Though participants openly and freely discussed and acknowledged observing bias in schools they were reluctant to examine their own biases or admit that they might be contributory. Additionally, study participants overwhelmingly ascribed bias to unconscious thought. This appeared to assist in their justification of otherwise good and noble educators engaging in biased behaviors or thought.

This study's findings have utility for policymakers, practitioners, and future researchers. Combining a technology that enhances participant engagement and fosters empathy with subject matter that educators highly value demonstrates the potential of interactive and immersive training programs to address one of the most significant issues in public education. Furthermore, the adaptability of VR simulations to address various challenges educators encounter in preservice education or in-service continuing education holds promise, as evidenced by the participants' responses to this research experience.

Educator Perceptions of Virtual Reality Bias Identification Training and Bystander Intervention Techniques

by
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DEDICATION

This dissertation is dedicated to the tens of thousands of public-school employees in my home state of North Carolina. Their commitment to shaping the future of our republic by educating the next generation of voters truly embodies the last great hope for democracy. Personally, public-school employees, ranging from those in elementary education to graduate school, have had a profoundly positive impact on my life. Whether they served as formal instructors, colleagues, supervisors, mentors, or subordinates, these dedicated individuals become genuine educators not merely by title but through the nature of their work in supporting learners, regardless of whether it's in a licensed classroom role, driving a bus, serving lunch, or maintaining the facilities.

As a young man contemplating my future inside a high school counselor's office, I was struck by the nobility of this profession and it sparked my interest. Fourteen years later, I still firmly believe that those who traverse the corridors of our public-school buildings in this state generally represent some of the most generous, compassionate, dedicated, and impactful members of our society. To all the unsung heroes out there, my heartfelt best wishes go out to you. I remain hopeful that one day you will indeed have the recognition and appreciation you so rightly deserve, even to the extent that those in positions of power will learn to dance to the tune that accompanies your song!

BIOGRAPHY

Scott R. Lassiter is a practicing North Carolina public-school administrator. He graduated with honors from NC State University, where he served as student body treasurer and earned a degree in political science with a secondary social studies teacher concentration. He embarked on his career as a classroom teacher and, after four years, attended night school to earn his master's in school administration, again with honors, from North Carolina Central University. He has previously served as an assistant principal at a comprehensive middle school and as the founding assistant principal for a unique public alternative middle school catering to at-risk students. Recognizing the need to provide additional financial and job-skills support for his students, he founded the Lassiter Education Foundation, a federally recognized 501(c)(3) non-profit organization.

A native of North Carolina, Scott has been actively engaged in his community since a young age. After graduating from Apex High School, where he served as student body president, he dedicated four years to serving on the Apex, North Carolina Town Council. In 2020, he was elected as one of three Wake Soil and Water Conservation District Supervisors, representing over 1 million residents of Wake County, NC. Additionally, he holds the position of president of Area IV for the NC Association of Soil and Water Conservation Districts. Lassiter also chairs his school district's principal and assistant principal association's legislative committee, where he leads advocacy efforts in the North Carolina General Assembly.

Early in his career, Lassiter recognized the issue of disproportionality, particularly in exclusionary practices, within schools. In his current role, he encounters students from across his district who are assigned to his school as a disciplinary reassignment. His district-wide perspective makes him a valuable asset in examining best practices to support struggling students, while his involvement in political activities provides him with opportunities for meaningful interactions with policymakers.

ACKNOWLEDGMENTS

Though it would be impossible to mention all those who have assisted me in my academic, personal, and professional journeys leading up to the publication of this dissertation, I will include a few. First, a special thanks to my dissertation committee, which includes Dr. Lisa Bass, Dr. Timothy Drake, Dr. Henry Johnson, and is chaired by Dr. Michael Ward. Without their tremendous support, this work would not have been possible. Dr. Michael Ward deserves special recognition for guiding this sometimes overly verbose, opinionated, and often distracted student through this arduous process.

Professionally, I’ve had the privilege of working with some great principals. Ms. Nancy E. Allen, the principal who took a chance on hiring me, a mid-20s teacher with only four years of classroom experience, as her assistant principal, deserves thanks for that risk and her continued support even into her retirement. Her commitment to me was enormous, and her heart was always in the right place. I was also blessed to work with Mrs. Vivian Pridgen, a late colleague who returned from retirement to serve as an interim assistant principal alongside me during my early years. Her words of affirmation, wisdom, and insistence that I further my education pushed me forward. My current principal, Mrs. Janet Perkins, has supported me and provided the space to lead, conduct research, write, and offered her prayer and support. She never misses an opportunity to promote my work, and for that, I am eternally grateful.

Special mention is deserved by Ms. Helen Younger, my grandaunt, who served North Carolina Public Schools for over 30 years as a secondary English teacher. Over 25 years of that service was in the same room at New Hanover High School in Wilmington, NC. At 99 years old, her perspective is invaluable. Having taught through integration, race riots, a presidential assassination, and various other pivotal events in American history, she remains a tremendous

resource for me, both professionally and personally. Her love for the profession, her community, and me serve as a source of inspiration to continue pushing for our schoolchildren and kept me motivated to finish this dissertation, an accomplishment for which she has expressed great pride.

Of course, all good Southern boys need to thank their mama, and mine is none other than Ms. Barbara Ann Lassiter, who is a retired state employee and a brilliant woman with a giving spirit. She poured her heart into raising her children and striving to offer us the very best. Her insistence that I pursue a college education, advocacy for me as a student, and unconditional love serve as a constant source of strength. Over 30 years ago, she developed an experiential driving safety simulation exhibit for the North Carolina Governor's Highway Safety Program that shared many aspects of today's VR training explored in this dissertation.

Mr. Stephen P. Lassiter, my older brother who taught me to fight in more ways than one, deserves credit for my strength as well. Mr. Henry A. Lassiter, Jr., my late father, was the most reliable man I've ever known and deserves acknowledgement. His word was his truest bond. He served as my picture of strength, resiliency, and masculinity through his years of labor, service, and by staying true to his principled beliefs. Thanks, dad, for always exposing me to the world around me and expecting the best from me.

Also deserving of special recognition is Mr. Henry A. Lassiter, Sr., my late grandfather, who served as a United States Marine Corps Major during World War II. Overhearing me criticize a teacher while I was in high school, he challenged me to try doing it myself if I thought it was so easy. I did just that, and here we are! As grandparents go, I was blessed on multiple fronts. Ms. Ernestine Lambert, my late maternal grandmother, was the strongest woman I've ever known and deserves my acknowledgement for my successes. Enduring a challenging childhood and a great deal of continued trauma, she persevered. Her love for me was immense, and her memory soothing in difficult times.

It’s not lost on me that I’ve benefited from some strong mentors in my life. Mr. Richard Y. Stevens, a retired state senator and county manager who edited my college admission essays my senior year in high school, has remained a trusted confidant, loyal friend, and brilliant advisor deserving of my thanks. As is Mr. Keith H. Weatherly, my hometown mayor who saw fit to appoint me at 18 years old to a town advisory board, supported my successful run for town council, and who remains a source of wisdom and laughter. Mr. Donnie Harrison, retired Wake County Sheriff deserves recognition for his frequent and needed “welfare checks” during difficult times along with his unwavering support of my public service and leadership journey. Mr. Ronald York and Mrs. Louise York are my next-door neighbors and friends who offered wisdom and encouragement through this process. They deserve accolades. Mr. York’s late wife, Jane, served as a public-school superintendent and earned her doctorate. Somehow, he knew I was going to get my doctorate before I did!

And finally, Miss Hannah Niles, whose love and resiliency are truly inspirational and for whose presence in my life I am undeserving.

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CHAPTER 1: INTRODUCTION

Background

A plethora of peer-reviewed research document the implicit racial, cultural, and gender biases of Americans manifested in multiple and varied institutions including the criminal justice system (Arnold et al., 2017), healthcare organizations (Wang et al., 2015) and education (Baker, 2005). These biases, or preferences of little or no relevance that could influence an outcome, are based on a variety of differentiating factors, including skin color, hairstyles, clothing, language, and other perceived characteristics. In contrast to explicit or conscious bias where individuals purposefully think or manifest their bias, implicit bias is a less overt form of prejudice that is exhibited in subconscious thought, right below consciousness (Baron & Banaji, 2006). Ideally, in a world without bias, overrepresentation of certain populations or groups in circumstances of positive outcomes or negative outcomes would be eliminated. In schools the manifestation of bias in the could result in underrepresentation or overrepresentation of various groups depending on the preferences of instructors, administrators, counselors, and even classified staff. If bias, conscious or unconscious, plays a role in the adult decision-making in a school system, then just and equitable practices are likely at risk.

Over the past few years, several psychologists have begun to focus on the role that these associations, some of them unconscious, play in individuals' beliefs and behaviors; they have focused significant work on development, administration, and analyses of results from the Implicit Association Test (IAT). The test is intended to detect subconscious association between groups, such as racial groups, and objects or concepts, such as violence or other stereotypes. The most disconcerting takeaway from the IAT's millions of data points is that the unconscious attitudes of subjects may be incompatible with stated conscious values. Yet experts like Gladwell

(2005) have asserted research that unconscious thoughts can be powerful predictors of how one may act in certain spontaneous situations.

The IAT has been administered to segments of American society, including preservice and in-service public-school educators. Results show that educators possess similar levels of bias when compared to other professionals (Blackson et al., 2022). However, continued exposure of professionals from various occupational groups to examples of bias manifestation in recent research has been shown to decrease reported levels of bias among subjects (Somo et al., 2022). This dissertation study addresses public school educators' perceptions regarding implicit bias and bystander intervention techniques highlighted in an immersive virtual reality (VR) training program. Additionally, the study contributes to the very limited existing literature that addresses the exposure of in-service educators to VR bias mitigation techniques.

Statement of the Problem

Famous anthropologist Franz Boas engaged in serious scholarly inquiry questioning the once dominant academic paradigm that biases are rooted in justifiable differences in races and cultures. Rather than accepting the comfort of bigotry towards various races and cultures, Boas (1938) asserted that "… for other conditions being equal, a race is commonly described as lower, the more fundamentally it differs from our own" (p. 5). Boas' paradigm shifting academic work related to race and bias date back to the late 1890's. Additionally, Boas concluded that science when subjected to prejudice is untrustworthy. He further concluded that "The suppression of intellectual freedom rings the death knell of science" (1938, p. vi).

In more recent American history, since *Brown v. Board of Education* was decided over seven decades ago, public schools have been involved in fulfilling and administering that legal mandate of inclusion and diversity. Considering the heterogeneous nature of American society, it has proven to be extraordinarily complex to implement. Students of various ethnic, religious, racial, and cultural backgrounds attend school together to be taught by educators who are also of varied ethnic, racial, religious, and cultural backgrounds and identifications. Gender and sexual identity differences further contribute to this diversity. Such heterogeneity provides substantial opportunities for implicit bias to be demonstrated among professionals.

Moule suggests that implicit bias is the root of most racism. He categorizes racist interaction that stems from implicit bias as “blink of the eye” racism (Moule, 2009). Scholars have further expanded the concept that good people do not condone or engage in racism since the unspoken societal norm is that “good people do not discriminate or in any way participate in racism” (Gaertner & Dovidio, 2005, p. 2). Therein lies the fundamental problem. Individuals typically acknowledge that racism, discrimination, and unequal outcomes exist based on race and gender. However, societally there is agreement that the systems, actions, and behaviors that create these outcomes are wrong with subjects nearly universally reporting they are not biased. (Boutwell, 2017). Boutwell also concluded that about one quarter of sampled subjects, who represented a cross-section of the American population, personally felt discriminated against, mostly on the basis of race and gender. These findings further expose the hypocrisy of a society that nearly universally dismisses the idea that they as individuals contribute to racism or gender discrimination.

Experiencing bias undoubtably contributes to students feeling unwelcome and unsafe in their schools. Students in schools perform better when they feel safe. Studies have found positive school climate to be a safeguard against negative peer interactions such as bullying and to be a risk-reducing factor for child mental and behavioral disorders (Stadler et al., 2010). In contrast, exposure to unsafe school climates where conflict is the norm is associated with both external manifestation of defiant and aggressive behavior and internal strife for students (Duru & Balkis, 2018). One of the reasons that disciplinary consequences are more frequently applied among non-majority students in a school may be implicit bias among staff (Carter et al., 2017). Presumably educators who mean no harm, who do not consciously condone bigotry or racist behavior, or who may even consciously work to eliminate racist behaviors, could have unconscious feelings towards a particular group that originate with stereotypes that play a part in their decisions and subsequent actions. Implicit bias can play a part in identifying disciplinary problems, making judgments about the severity of the misbehavior, and making judgments about punishment or consequences (Milner, 2013). Bias has the potential to creep into academically gifted and special education placement determinations by the educator or educators vested with the authority to identify student participants (Gaviria-Soto & Castro-Morera, 2005). Adult interactions may also be impacted by implicit bias. Such perspectives can be the source of negative educator collegial interactions with peers of different types if the bias is not addressed (Williams & Boginski, 2022).

So-called restorative practices (those seeking to take a problem-solving approach to assisting students who fail to meet community norms) cannot, on their own, be expected to eliminate implicit bias. In order to eliminate discipline and academic disparities among subgroups of students, steps should be taken to recognize and mitigate implicit bias (Wiley et al., 2018). If school leaders fail to address implicit bias, which is a key dimension of the foundational and subconscious root of the issues underpinning achievement gaps, closing such gaps will be difficult.

Traditional solutions to the problem of implicit bias may have less potential for success rooted in the very framing of the problem itself. Implicit bias is usually thought of as something within the mind of a person that influences their behavior in an unconscious way; indeed, some scholars have used neuroscience to explain such bias (Amodio & Berg, 2022). At least one scholar is challenging the very definition to offer individuals more control over their inherent biases. Jan De Houwer (2019) argues that implicit bias should be explored from a behavioralist framework; B. F. Skinner offers a good example of a behavioralist. Instead of shirking responsibility for biased behaviors on some hidden entity in the mind, De Houwer suggests that a behavioralist viewpoint may be more effective in mitigating the harmful effects of implicit bias, since it does not require individuals to adopt a specific theory for their bias. Instead, he focuses on modifying the behavior. Additionally, De Houwer asserts that by reframing implicit bias in a behavioral framework, individuals are more likely to accept it as possibly remedied, since behavior is traditionally seen as able to be changed.

Research that explicitly addresses virtual reality tools as mechanisms to mitigate implicit bias in the workplace is limited. There is even less research that addresses such professional learning in American public-school environments. By contributing to the existing body of knowledge on the subject of implicit bias and publishing participants' perspectives of a possible intervention to address such, I offer scholars and practitioners alike an increased understanding of the problem of implicit bias in schools.

Purpose of the Study

The purpose of the study was to explore the attitudes of public school-based instructional and administrative personnel relative to the issues of racial and gender bias and effective bystander intervention techniques in order to look for trends and patterns in perceptions across various demographic categories. The research took place in a large suburban school system in the southeastern United States and incorporated eight primary and secondary educators as participants. The school system was chosen due to its relative diversity and a progressive aura manifested by continual election of school board members running on campaigns of equitable practices. Arguably, educators in this district had already been exposed, in some fashion, to the concept of implicit bias and may have already perceived themselves as less biased.

The research was exploratory in nature. I used Braun and Clarke's (2016) six-step thematic analysis procedure to produce trustworthy results from participant interview transcripts. Specifically, I first familiarized myself with the data within the transcripts. Then I generated initial codes. Next, I searched for themes. Then I reviewed themes and then defined and named them. Finally, the results are reported in a formalized way in the appropriate chapter of this dissertation.

I employed an adapted Importance-Performance Analysis (IPA) to gauge the importance that participants place on various issues surrounding bias and bystander intervention. Since I asked scripted questions to participants regarding their perceptions, in order to gauge the level of importance of the concept discussed in the question, participants were asked immediately after their answer to explain how important they thought the previous concept was. Thereby the general concept of an IPA was explored but in a fully qualitative way using common language. The interview protocol invited participants to describe the conclusions, if any, that the training helped them reach about their own professional perspectives and practices. Additionally, participants were asked if they planned to modify their professional practice based on what they learned through their experiences in the VR program.

As cited so far and as cited more extensively in the literature review section of this dissertation, many academics and professionals alike have written extensively on the topic of implicit bias. Technophiles and instructors for highly specialized and often technical curriculum have written about and explored virtual reality applications to both entertainment and education. However, limited peer-reviewed research has been published regarding the intersection of virtual reality technology and anti-bias training. Some literature has addressed VR's utility in helping users further hone soft skills as well as simulating real-world teaching conditions for pre-service educators. However, I am unable to find conclusive research regarding the perceptions of in-service educators regarding viewing and learning from implicit bias episodes in VR.

Research Questions

The primary research question asks the following: What are the perspectives of participating educators regarding virtual reality implicit bias training in their work?

The four sub-questions related to the central research question are as follows. They seek to investigate the aforementioned primary question in more depth and in a more specific context:

a. What are the perceptions of participating educators regarding the recognition of bias and its manifestation in their own workplace behaviors?
b. What are the perceptions of the participating educators regarding the implications of bias in dealing with conflict such as student behavior management or collegial interactions?
c. What are the perceptions of the participating educators regarding the implications of bias for teaching and learning activities such as instructional intervention, talent identification, and special education determinations?
d. How do educators describe the value of experiential types of PD in changing practice?

Definition of Terms

The following technical terms are used throughout this dissertation and have been used during research. Following each term, you will find the definition of the terms applicable to this study.

Achievement gap: This term refers to the persistent and well documented gap in academic outcomes of students when comparing racial subgroups, specifically Black and brown learners, with their Caucasian peers (Baker, 2005). Implicit bias has been purported to play a role in the unequal outcomes for minority students.

Administrative personnel: For the purpose of this study this term is defined as professionally licensed school-based administrators such as assistant principals and principals (Brooks & Watson, 2018).

Beliefs: In this study this term means sincerely held opinion or convictions that an individual accepts as true or real but may not be able to back up with factual evidence (DeCuir-Gunby & Bindra, 2022).

Behaviors: This term is defined as the way that one conducts oneself towards and/or around others. Specifically in the context of this study it means what a student or professional educator does to others within their respective roles in school (De Houwer, 2019).

Bias: The meaning of this term is to have favor for or against a person based on a categorizable characteristic (Arnold et al., 2017). For the purposes of this study this term could refer to bias that exists either consciously or subconsciously.

Civil Unrest: This term refers to any mass act of civil disobedience in response to a precipitating event in which authorities have difficulty maintaining their authority and are often tools of oppressed people to attempt to force societal change (Peay & Camarillo, 2020).

Conscious thought/action: This type of thought or action refers to the type of thought or action that is controlled and well thought out, deliberate, slow, and takes in all available information into consideration (Gladwell, 2005).

Culture: For the purpose of this study this term refers to the customs, arts, institutions, and achievements of a particular group of people such as a nation, or social group (Baker, 2005).

Gender: For the purpose of this study this term refers to a traditional and widely accepted definition that corresponds with either one of the two sexes, male or female, of which a person is categorized based on their biological sex. The concept of masculinity is associated with man and femininity is associated with females (Rosenfeld & Tomiyama, 2020).

Implicit bias: This term refers to bias that happens without conscious thought (Arnold et al., 2017).

Incrementalism: This term refers to the theory and/or process of policy slowly evolving over a significant period of time resulting in slow but steady social change (Jones & Baumgartner, 2012).

In-service educator: This term refers to a licensed professional educator who is actively instructing students as a teacher or providing other auxiliary services such as counseling, speech services, or one who is managing students and teachers such as an administrator (Reeves & Chiang, 2019).

Interest groups: This term means organized, either formally or informally, groups of engaged people with a desired public policy outcome (Jones & Baumgartner, 2012).

Media: For the purpose of this study this term means the collective mass communication channels consisting of main-stream newspapers, online publishers, television, and radio networks (van der Meer et al., 2020).

Perceptions: In this study this term is used to mean the way a person regards, understands, or interprets something with which they interact (Mayson, 2019).

Public-school: For the purpose of this study this term is used to refer to a traditionally operated school organized and funded by the State of North Carolina under Chapter 115 of the North Carolina General Statutes that is not a charter school (Brooks & Watson, 2018).

Practitioners: This term, for the purpose of this study, means anyone engaged in a practical way of educating students such as teachers, administrators, counselors, paraprofessionals, etc. (Reeves, T., & Chiang, J., 2019).

Professional instructional personnel: This study uses this term to mean a fully state licensed teacher who has been university trained and who is directly involved in delivering curriculum to students (Brooks & Watson, 2018).

Race: This term is used simply in this study to mean a category of humankind that shares certain distinctive physical traits (Jablonski, 2020).

Sexual identity: In this study this term is used to describe a person's identity in relation to their sexuality, including categorizations such as gay, straight, bi-sexual, transgender, etc (Singleton, 2013).

Sub-conscious thought/action: In this study this term refers to the type of thought or action that is automatic and happens without actively thinking and happens without active application of all information or knowledge (Gladwell, 2005).

Virtual reality: In this study this term means an immersive digital life-like simulation of an environment that a person can interact with in a realistic way by using specific computerized technology (Dhalmahapatra, 2021).

Significance of the Study

Based on a growing body of empirical evidence, I believe that understanding various viewpoints, acknowledging bias, and modeling positive interactions are necessary to improve student outcomes in diverse P-12 public school systems. Many beginning and veteran teachers lack an understanding of the students they teach (Worrell, 2022). The process of learning is often stressful for teachers; thus, resulting in poor performance. By incorporating a safe, immersive, and private VR experience into the training of teachers, friction felt between students and teachers may be avoided. Relationships could function more productively, resulting in positive student learning outcomes and increased efficacy among teachers. By incorporating a new technology (VR) to expose educators to instances of bias, I seek to determine if there are perceived instances of the study participants becoming more aware of their own behaviors and actions.

My research addresses deficits in existing research around educator perceptions about implicit bias and its effects on students. Also, it gathers additional educator input regarding their perceptions of implicit bias VR intervention. As practitioners, the study participants' perceptions should be important driving forces in the implementation of VR bias exposure training. If the findings indicate that the training generates positive changes in participant perspectives, this research could be used to guide policymakers and teacher trainers in creation and roll-out of similar professional development. The experience of the subjects may be helpful in improving their own practices.

Aside from improving the practices of study participants, the knowledge gained regarding the perception of the participants' VR experience could help influence schools to weigh the value of incorporating such technology into their faculty training. Therefore, the study has the potential to ensure that educational institutions are being wise stewards of funds. Additionally, the research conclusions offer significant benefit to the body of knowledge by helping future researchers understand the perspectives of the subjects regarding their experience, their beliefs regarding importance of concepts, and any self-reported remediation affects the training may elicit.

The bystander intervention components of the VR training have the potential to equip participants and future researchers with appropriate techniques to disrupt observed acts of microaggressions or discriminatory practices. Though the sample size is small, the vast real-world and authentic data collected is highly beneficial. That benefit is not just limited to the participants but also can be extended to future generations of scholars interested in the perceptions of in-service educators regarding race and gender bias during this time in American public-school history. By analyzing the data that this study has captured and disseminating it publicly, this work advances the understanding of implicit bias and furthers the conversation on this important subject and its currently demonstrable negative ramifications for society.

Organization of the Study

My study explored the attitudes of in-service public P-12 educators in the central region of North Carolina relative to the issues of racial and gender bias and effective bystander intervention techniques to look for trends and patterns in perceptions across various demographic categories. The remaining chapters of this dissertation address specific topics. In Chapter 2 of this study, relevant literature that pertains to the concepts of virtual reality training, biases, and both the PET and DPT frameworks is reviewed. Historical content related to racial and gender bias as well as expert perspectives of virtual reality training, bias intervention, and manifestations of such are reviewed. Additionally, this chapter examines the contemporary environment in which the study takes place.

Chapter 3 provides an overview of the research methodology that my study used. A detailed description is given about this study's process of sampling, data collection, and data analysis. The VR experience process as well as the interview procedures are also described. Finally, the statistical methods for analysis of the qualitative data are detailed. Chapter 4 provides the detailed results of the study. The chapter addresses findings related to the perceptions of in-service educators after experiencing virtual bias simulations and any professional practices they might modify as a result. Additionally, information regarding variances among demographic subgroups of participants are explored. Chapter 5 concludes with a discussion of the findings along with recommendations for policy, practice, and future research based on the results of the study.

Summary

There seems to be a scholarly consensus that bias exists in American schools. The bias can be broken down into various subcategories and researchers have done so. The bias is not specifically limited to America nor to school employees but rather is pervasive where heterogeneous populations are served. Research exists to show the harmful effects of bias in schools and other professional settings. Limited research exists to show that some reduction bias interventions are more effective than others in eliminating bias in educators or mitigating their harmful effects. This is particularly the case with those interventions that infuse empathy and realistic examples. Virtual reality has been used to teach soft skills in workplace training and has some emerging research to support its effectiveness in countering bias. The perspectives of educators have been researched to some degree regarding VR and VR training in the school setting. However, at this time, I am unable to find any example in the body of knowledge that pairs educators with VR bias remediation training to determine their perceptions regarding its effectiveness, need, or potential for student and school advancement.

CHAPTER 2: LITERATURE REVIEW

Chapter Introduction

A great deal of literature is available on the broad topic of implicit bias, which is addressed in this dissertation. However, much less research exists involving purposeful interventions to address implicit bias and its impact; this is the case for public school settings. Furthermore, published research that addresses the specific research questions posed in this dissertation is very limited. Virtual reality workplace training is not extensively advanced in the school setting as a practice; there is only minimal emerging research to support its effectiveness. Delving more specifically into the topic of educator implicit bias intervention using VR is a research focus nearly unexplored by scholars.

In this chapter, I present a review of recent and relevant literature to serve as foundation and provide context regarding the theoretical framework, the main topics of the study, and the existing gaps within the literature. A historical background and contemporary context for the topic of bias are first provided to contextualize the depth and evolution of the problem. A discussion of the theoretical framework follows. The main topics of the literature review include the recognition and manifestation of bias, the implications of bias in practice, interventions for reducing bias in the workplace, and virtual reality training. Exploring the existing literature surrounding these topics, as well as the gaps in such literature, may help in understanding how virtual reality bias identification training and bystander interventions could benefit educators.

Historical Background

Infamous early European economist Adam Smith proclaimed an authoritative truth that it is a basic part of human nature to “truck and barter.” Smith believed that this desire to trade was put into practice before humans even began to speak and communicate with formal language.

Various groups, with different cultural understandings and appearances such as skin-tone possibly due simply to evolutionary variances in ultra-violet light exposure attributed to geography, were brought together (Pomeranz & Topik, 2006). Thus, it is likely that racial and cultural bias has existed ever since humans of different groups first encountered each other for the purpose of trade. In short, “othering” based on skin color, dress, language, or occupation is not new. Basic human instinct draws humans to those with whom they feel a shared connectedness (Jablonski, 2020).

Roots of gender and sexuality bias likely predate even the first human trading experiences. Some researchers have suggested that gender inequality dates back to the Prehistoric Era; a case in point arises from Mesopotamia, where women were thought of as property (Cintas-Peña & García Sanjuán, 2019). Though examples of highly exalted female rulers such as Cleopatra in Egypt exist, the general historical theme remains that societies where men and women were more closely aligned in status, work, and value was to classify such groups as uncivilized. By the second century B.C.E., gender inequalities were totally entrenched in nearly all middle eastern societies quite contrary to the seminal role of women in their creation (Leaner, 1987). Though different constructs, gender and racial bias are inextricably linked. Examples are readily available in contemporary and historical times that the dominant culture’s treatment of women of non-dominant cultural association was far from equal.

Further evidence of historical cultural and racial bias is exemplified by the typical American historian’s largely non-existent examination of the period dating back roughly 30,000 years prior to Columbus arriving and the Europeans’ subsequent conquest of the Native American inhabitants (Forbes, 1963). The institution of slavery, whether as an American institution or as a practice seen in other parts of the world, uses cultural and racial bias as a primer to compartmentalize a human being so differently as to allow other humans to accept them as property unworthy of humanity. The persistence of such perspectives can be seen in religious extremists, whether they be affiliated with the Klu-Klux Klan or Al Qaeda, that justify the killing of other humans who pose no logical immediate threat. America has an evolving ever-present relationship with race where it is featured prominently in the nation's history and present, and even considered a debt that has been compounded over hundreds of years (Span, 2015).

More recent examples of racial and gender inequity's continued pervasiveness exist in outcome measurements of today. There are far fewer Black millionaires in the United States today than their White counterparts per capita. There are fewer Black college graduates per capita when compared to Whites. Incarceration rates are higher per capita for Blacks than Whites (Ulmer et al., 2014). Students of color are overrepresented in special education and graduate from high school at lower rates than their White peers (Ferri & Connor, 2005).

Even quasi-medical decisions made by educators during the special education evaluation process seem dogged by implicit bias. "Racial disproportionality plagues judgmental but not nonjudgmental categories… Judgmental categories capture subtle disabilities for which the diagnosis rests on the 'art' of professional judgment" (O'Connor & Fernandez, 2006, p. 6). That so-called 'art' of professional judgment is a ripe breeding ground for implicit bias. Research indicates that overidentification of Black and Hispanic students exists regardless of factors like socio-economic level and level of education of parents being controlled. (Kincaid & Sullivan, 2016). Additionally, disabled youth are significantly overrepresented in the justice system both as juvenile offenders and as adult offenders (Kincaid & Sullivan, 2019).

As early as preschool, race and gender affect the way discipline is administered by schools in the United States. Black students and male students are more likely to be subject to exclusionary consequences like suspension and expulsion. Such sanctions often have long-term negative ramifications that affect the engagement and relationship of students with formal education (Gregory & Fergus, 2017).

Ground-breaking research completed in the 1960's offered empirical evidence to support the relationship of teacher expectations to student outcomes (Rosenthal & Jacobson, 2003). The researchers erroneously labeled some students as gifted when they actually did not perform any better on an IQ test than their peers. The students' teachers then began to treat these miscategorized students differently by expecting excellence and constantly reminding the pupils of their superior capacities. This group was compared to a control class that had no such intervention. Even when controlling for other factors traditionally used to offer explanations for variance in student performance such as socio-economic status and race, the mislabeled elementary students in the study showed major gains on a subsequent IQ test (Rosenthal & Jacobson, 2003). It may also be inferred that when educators hold biases that cause them to believe a group is less capable than another that the opposite of Rosenthal and Jacobson's *Pygmalion Effect*, which describes how others' expectations can influence one's behaviors and performance, can be expected.

Historical evidence from the literature points to the possibility that gender, sexuality, racial, and cultural biased have existed for as long as historical data have been recorded (Cintas-Peña & García Sanjuán, 2019; Forbes, 1963). Although concern about and attention to bias and its negative consequences have increased over the years, the problem has persisted. Bias is a systematic problem within various societies, communities, and institutions, including the school (Gregory & Fergus, 2017). The recognition of bias and the subsequent perspectives and movements surrounding it have since become a prominent topic in the contemporary era.

Contemporary Context for the Study

In an era of increased politicization of public education, particularly around race, culture, and sexuality, this study is timely. Americans are seeing acts of violence play out in 24-hour news networks, are feeling isolated by the lasting cognitive effects of a global pandemic (Ingram et al., 2021) and, are receiving massive amounts of algorithmically generated information in their handheld devices designed to elicit confirmation bias (van der Meer et al., 2020). Educators have been thrust into political positions where they are charged with serving ideologically opposed stakeholders. Some of the educators' constituency want to abolish the police, others display thin blue line flags or are part of a law enforcement organization themselves. One group shout Black lives matter. Another defiantly flies a banner supporting former President Donald J. Trump at a high school basketball game (Kramer, 2022). Yet, each child from anywhere on the political spectrum is entitled to receive his or her protected right to a free and appropriate education as codified in the North Carolina Constitution.

The contemporary policy context is further confounded by the passage of legislation specifically banning Critical Race Theory from being taught in the classroom by the North Carolina General Assembly; the bill was vetoed by Governor Cooper (*Gov Cooper Vetoes North Carolina Bill*, 2021). Meanwhile the Wake County Public School System Board of Education refused parent demands to remove books containing explicit images and topics exploring homosexuality and transgenderism (Walkenhorst, 2022). Almost simultaneously, the North Carolina State School Board adopted new standards that emphasize inclusiveness (Blanford, 2021) and cultural competency as well as social emotional learning goals (North Carolina Department of Public Instruction, n.d.). Yet, conservative school board hopefuls and parent advocacy groups rally around phrases like “educate, don’t indoctrinate” (Pointer, 2021). In an era of ideological conflict, schools are not immune to the surrounding societal discord.

This study occurs at a point when there has been relatively limited exploration of the potential applications of artificial intelligence to issues such as bias and implicit bias. As machine learning and algorithmic decision making are becoming more commonplace in roles previously occupied by human-beings, it has been inferred that bias could be more easily checked. Instead, researchers have observed the opposite (Mayson, 2019). As artificial intelligence programs receive information that such technology can itself be biased, their outcomes often produce even more extreme results of biased decision making. Furthermore, the cyclical nature of inputting biased information into an algorithm by humans, receiving biased information from the algorithm, and then reengaging with the algorithm to input more biased information, compounds the increase of biased output in such a way as to grow the machine’s bias exponentially. In early models of machine learning programs involving judgment calls, many of them evolved to become irreparably racially and gender biased (Sun et al., 2020). Research consistently suggests that the problem of implicit bias is of human creation and most likely will require a human solution but, possibly and unironically, one that might use VR technology to trigger self-reflection and empathy.

Theoretical Framework

Two existing theories have been selected to frame this present study and potentially explain educators’ attitudes and perceptions regarding virtual reality bias identification training and bystander intervention techniques. The first theory, the Punctuated Equilibrium Theory (PET) as explained by True et al. (2007) is useful in an examination of the perceived need for and importance, or lack thereof, of such training for educators. The second theory, the Dual

Process Theory (DPT) aids the exploration of the manifestations of implicit biases of educators that need to be addressed. Together, these two theories frame the research questions and instruments, as well as the potential findings of the present study.

Punctuated Equilibrium Theory

A virtue of American democracy has long been considered its ability to "muddle through incrementally" as policies governing institutions evolve (Lindblom, 1959). Incrementalism and its relative benefits and drawbacks to governance has long been a topic of scholarly debate. When juxtaposed with Punctuated Equilibrium Theory (PET) that argues the status-quo continues for long periods until a specific nearly cataclysmic event or events force policy action (Jones & Baumgartner, 2012), the differences between the two theories are highlighted. Proponents of the PET proposed that major developments or changes in policy only occur in response to drastic crises or conflicts, and that otherwise, policies often align with the status quo (True et al., 2007). The resulting pattern is thus one of mostly institutionalized stability with occasional surges of change in the *policy image* (True et al., 2007). The policy image depicts how people perceive the existing or emerging policies (Peterson, 2021). Emerging images are the ones that stem from drastic events, such as nuclear energy safety debates in the 1970s or the 9/11 attacks (Peterson, 2021). Once these new images are mobilized, they may reach the macro level, thereby causing disequilibrium (Peterson, 2021; True et al., 2007).

Based on PET principles, periods of disequilibrium are met with either positive or negative feedback (Peterson, 2021; True et al., 2007). Positive feedback occurs when the new policy image becomes popular and engenders policy change, while negative feedback occurs when the status quo is maintained (Peterson, 2021; True et al., 2007). Periods of disequilibrium may not necessarily be a single large-scale event; rather, small events may build up over time until they create concern that is difficult to ignore (True et al., 2007). A prominent example of such buildup is the phenomenon of climate change (Yldirim, 2022). The issue of climate change continues to be largely ignored despite evidence of relatively minor occurrences around the globe. These occurrences would eventually lead up to a major catastrophe that would then be impossible to ignore (Yldirim, 2022). Perhaps only then would climate change be part of the macro agenda and engender major policy changes.

It is not a simple feat to obtain positive feedback from periods of disequilibrium. Barriers and costs exist that prevent positive feedback and contribute to negative feedback (True et al., 2007; Yldirim, 2022). The first barrier involves the cognitive costs of positive feedback. Decision makers are obliged to recognize the problem, attend to it, process it, and develop solutions for it (True et al., 2007; Yldirim, 2022). This cognitive process may be too complex for decision makers, especially when they are faced with the option of negative feedback wherein the only step is to retain the status quo (Yldirim, 2022). Adding to the barrier of cognitive costs are institutional costs (True et al., 2007). At the institutional level, it would be simpler to maintain the status quo than to modify major policies (True et al., 2007). Furthermore, various mediators may interfere with the process, such as media and other political actors (Opperhuizen et al., 2020; Yldirim, 2022).

The media, in particular, has been cited as a powerful tool for social amplification, influencing public opinion and attitudes regarding a specific issue and strengthening certain policy images (Opperhuizen et al., 2020). The media has traditionally been assigned three distinct functions in a representative democracy: acting as a forum, monitoring the behavior of actors and drawing attention to them, and highlighting issues and drawing public attention to them (Hold & Barkemeyer, 2010). Archived examples of the media playing each role in the coverage of the punctuating events in the summer of 2020 are not difficult to find through various media outlets. This is not a strictly American phenomenon; even international governments and organizations have historically been susceptible to PET in action (Lundgren et al., 2017). These interferences can create conflicting images and influence the decision makers' own values and perceptions, causing them to rely on heuristics to arrive at simple decisions that may not be the most optimal (Yldirim, 2022). These costs and barriers signify that major issues do not necessarily engender policy change, and that maintaining the status quo may be preferred by decision makers.

The PET has been utilized in previous research to highlight the decision-making processes following major events (Moutselos, 2020; Opperhuizen et al., 2020; Rauhaus & Johnson, 2021). A concrete example of the mechanisms behind PET and policy images was presented by Opperhuizen et al. (2020) in their article regarding earthquakes caused by gas drilling in the Netherlands. Since the 1990s, earthquakes have pestered Dutch villages surrounding gas fields (Opperhuizen et al., 2020). The earthquakes gradually became stronger and more frequent but did not receive much attention from either the media or the regulatory authorities until 2012 when a massive earthquake struck the village of Huizinge. During this period, a media storm ensued, highlighting physical hazards, material damages, and citizens' concerns. Regulatory authorities were then forced to address the issue by prioritizing safety and reducing gas drilling. These circumstances illustrate how a major event, with a boost from the media, led to policy change (Opperhuizen et al., 2020). Similar to the example of climate change, this concrete example regarding human-engineered earthquakes captures the principles of PET.

More recently, the Coronavirus (COVID 19) pandemic has also been discussed in alignment with PET (Rauhaus & Johnson, 2021). The pandemic itself has been cited as a period of disequilibrium that disrupted the status quo. Although initial responses to the pandemic had been short term and isolated per state, the persistence and severity of the pandemic had eventually led to macro-level responses, such as legislative policies on paid sick leave (Rauhaus & Johnson, 2021). While the pandemic response, together with the aforementioned earthquake response, provided perfect examples of the PET, the principles of PET also apply to issues of social justice. Covering a topic much closer to the present study, Moutselos (2020) discussed the case of multiculturalism in Marseille, France. The history of Marseille was rampant with racism that went unaddressed up to the 1980s (Moutselos, 2020). Major events like the murders of North Africans and the Algerian consulate bombing, among others, finally led to a response. Robert-Paul Vigouroux successfully formed a new political alliance promoting multiculturalism (Moutselos, 2020). In this example, the principles of PET showed how it unfortunately took the deaths of several people to induce political movement and policy changes to combat racism.

The United States, in the summer of 2020, witnessed multiple high-profile police-involved shootings of Black citizens and subsequent civil unrest in cities like Minneapolis, Portland, Seattle, Louisville, Los Angeles, New York, Chicago, Dallas, and Raleigh. These events resulted in calls by many for policy changes to address systemic racism and bias in society's formal and informal structures (Shuman, 2021). Interest groups such as those associated with the Black Lives Matter (BLM) movement have vigorously pursued policy change throughout the criminal justice system and other powerful institutions such as schools (Peay & Camarillo, 2020). As the systems continue to feel pressures from BLM and other organized groups, policy and perspectives that were once dominant are likely to be replaced with new ideas. These advocates are, or could be, sufficiently powerful to reframe the identification of issues, the problems, and potential policy solutions and even the institution, the actors, or location, where the decisions are made (Thomas et al., 2022).

The current national political climate is unstable with changing viewpoints towards traditional institutions and powerbrokers. The terms of policy debate are fluctuating. Such circumstances create the potential for radical change and even the loss of legitimacy from elites benefiting under the old policies (Hoyoke et al., 2009). A myriad of social justice initiatives, anti-discrimination policies, policing reforms, and mandatory bias training policies have been enacted in response by institutions. America's public schools joined in with renewed and varied efforts to combat implicit bias and its detrimental effects on student outcomes. PET informs research by helping to explain, in the context of significant public outcry, the rapid adoption of policies and implementation of trainings around implicit bias by so many national institutions, including schools. Additionally, PET concepts have been incorporated into the interview questions for this study. Continued research will be needed to determine policies and training methods that are effective. This study gathers qualitative perception results of educators experiencing one such method of bias training.

Dual Process Theory

Framing the other aspect of this present study, the Dual Process Theory (DPT) describes how individuals use two types of thinking or reasoning to process and respond to a stimulus (Bronstein et al., 2019). The first type of thinking is intuitive, automatic, subconscious, and does not involve the working memory (Bronstein et al., 2019). This type of thinking is where implicit biases, defined as automatic and non-deliberate mental representations associated with a social category, occur (Bursell & Olsson, 2021). The second type of thinking is more reflective and analytical, requires conscious effort, and depends on the working memory (Bronstein et al., 2019). Biases under this type of thinking are referred to as explicit bias, which are conscious and deliberate cognitive processes or actions (Ayalon et al., 2022; Bursell & Olsson, 2021). Overreliance on the first type of thinking and reduced analytical thinking has been linked to the concept of liberal acceptance bias (Bronstein et al., 2019). Liberal acceptance bias is the deviation from the rational and maintenance of delusions often found in individuals with schizophrenia but can also be present in healthy individuals. For instance, belief in fake news is one example of liberal acceptance; the individual simply accepts the news without processing it or confirming its truthfulness (Bronstein et al., 2019). In the same vein, some educators may rely too much on stereotypes and show implicit bias when working with their students.

Implicit bias often manifests as preference or favor towards one's in-group or others who share similar characteristics such as age, sex, or gender (Bursell & Olsson, 2021; Calvert et al., 2022). Implicit biases are believed to start from a young age; sources include the media and interactions with family and peers (Marcucci, 2020). Implicit bias also translates into one's actions or behaviors towards others (Calvert et al., 2022). For instance, Americans may not consciously or intentionally wish to treat African Americans differently, but they may unconsciously hold negative stereotypical thoughts regarding African Americans due to the endemic antiblackness that is perpetuated in American society; these thoughts may then manifest in their actions (Marcucci, 2020). Conversely, implicit biases such as emotional empathy may also be positive (Martingano et al., 2021). Emotional empathy, as opposed to cognitive empathy, refers to the automatic and spontaneous ability to understand others' feelings and respond to them. An example of emotional empathy is when infants cry in response to other infants' cries more than in response to other loud or startling noises. Similar automatic emotional responses may be found in adults who witness others' suffering (Martingano et al., 2021). This raises the possibility that positive implicit biases may be augmented in adults through training.

As a conscious and deliberate type of thinking, explicit bias requires more effort than implicit bias (Marcucci, 2020; Martingano et al., 2021). Unfortunately, such efforts may be difficult for some individuals in highly stressful occupations such as educators, who often receive too much work, especially in low-resource schools (Marcucci, 2020). Compared to emotional empathy in implicit bias, cognitive empathy may also serve as a positive form of explicit bias (Martingano et al., 2021). Cognitive empathy involves a more deliberate process of visualizing oneself in the place of another person and trying to take their perspective (Martingano et al., 2021). With the amount of effort required for the process of cognitive empathy, it may be more practical to target implicit biases and emotional empathy in teacher training to enhance their automatic responses.

Some examples of how the DPT can be used to frame studies of social issues exist within the literature. For instance, Martingano et al. (2021) conducted a meta-analysis of studies regarding the effects of virtual reality (VR) on users' empathy. Based on 43 studies, their results supported the DPT in finding that use of VR led to enhanced emotional empathy but not cognitive empathy (Martingano et al., 2021). The VR tool allows users to be immersed in a certain environment, thereby reducing the need for mentalization, and appealing to their automatic responses (Martingano et al., 2021). In another study, Calvert et al. (2022) examined the implicit biases towards hypothetical presidential candidates within a sample of 1,077 individuals from the United States. The hypothetical candidates varied in terms of race, sex, and party affiliations (Calvert et al., 2022). The authors found that although implicit biases existed within the sample, they were not significantly related to voting attitudes. Notably, the significant effects of implicit biases were all related to positive, rather than negative traits. The authors thus suggested that interventions for biases can focus on such distinction between positive and negative implicit biases (Calvert et al., 2022). In the case of the present study, it was useful to emphasize such distinctions and promote positive implicit biases.

Overall, the two theories discussed above were useful in framing the present study. Based on the principles of the PET, the recent events highlighting racism in the United States should elicit a response to of either positive or negative feedback. The PET was thus useful in framing the research question regarding the perceptions of educators on teacher training and interventions for implicit biases. Concurrently, the DPT was useful for distinguishing between implicit and explicit biases. It thus was used to frame the research question regarding the recognition and manifestations of bias by individuals in their workplace, as well as its implications for their practice. These two theories were useful for the development of my interview protocols and specific interview questions were tailored to gather participants' reflections regarding each theory's applicability to the subject being studied. The PET helped to inform my assumptions as to why there have been rapid advancements in the subject and the DPT helped to justify the concept of implicit bias being explored through an interview process after an immersive experience to draw the thought from the sub-conscious to conscious thought. The theories helped to explain the results further along in the study as participants shared responses regarding sudden reforms or need for reforms or reflect on possible biases they may have had during the immersive experience. Some interview questions included concepts from Dual Process Theory (DPT) to assess participants' perspectives on how unconscious and conscious cognitive processes influence biased behaviors.

Pertinent Research and Expert Perspectives

In this section, extant research and professional perspectives related to the constructs in my research questions, as well as the relationships among these constructs, is reviewed to describe what the body of knowledge discloses about them. These constructs include the perceptions of educators regarding the recognition of bias and its manifestations in school workplace behaviors, perceptions of the educators regarding the implications of bias in their practice, and perceptions of educators regarding interventions for reducing bias in the workplace. Existing evidence surrounding VR training and interventions is also discussed to explore current perceptions regarding this technology.

Recognition and Manifestation of Bias

The history and contemporary context of bias presented earlier is indicative of the pervasiveness of this problem in human society. At the same time, the two types of thinking or reasoning within the DPT are indicative of a distinction between implicit and explicit bias. Recognizing implicit and explicit biases, and how they manifest in the workplace, is an important step in controlling or eliminating them (Calvert et al., 2022). It is not difficult to establish the link between biases, either implicit or explicit, and the disproportionate rate at which Black citizens have uncomfortable or even deadly interactions with police (Siegel et al., 2021). Similar parallels can be and have been drawn between implicit and explicit bias and Black students' interactions with school officials (Posey-Maddox, 2017). Disproportionality exists in both disciplinary practices and academic outcomes (Shores et al., 2020). The academic achievement gaps separating White students from Black or Latinx students has been ubiquitous since the 1970s. Reports indicate that Black and Latinx students lag behind White students by two academic years during fourth grade, and by three to four academic years during middle and high school (Crutchfield et al., 2020). Eliminating or mitigating bias is seen as a step in the process of systematically producing better outcomes for traditionally marginalized groups such as Black Americans in general and Black students in particular. An essential step to eliminating such biases is to recognize them and become aware of their potential manifestations.

Though some primary and secondary educators believe that their profession is noble and beyond reproach, previous researchers have indicated that racial bias is prevalent in schools (Okonofua et al., 2020). Racism within schools can be divided into several different types, including: individual racism attributed to overtly racist staff members; dyadic racism, the interaction between two individuals; subcultural racism focusing on interactions between distinct subcultures in the school; institutional racism where standard operating procedures hurt members of one or more races as compared to the dominant race; and societal racism where inequity and inequality are the norm rather than the exception (Brooks & Watson, 2019). Current policies in some schools also contribute to the problem of racism, specifically towards antiblackness (Marcucci, 2020).

A prime example of a policy that helps to proliferate antiblackness is the *no excuses* policy within predominantly Black charter schools. The main idea behind this policy is that poverty, which is prevalent in the Black communities within which these schools are often located, should be no excuse for falling behind in education (Marcucci, 2020; Sondel et al., 2022). As a result, extreme social control and penalties are exacted in such schools (Marcucci, 2020). These charter schools often have extended schedules, excessive focus on standardized test scores, and harsh disciplinary practices (Sondel et al., 2022). Policies promoting enculturation are also enacted and assert that students are all expected to act and look a certain way (Marcucci, 2020; Sondel et al., 2022). These types of policies contribute to antiblackness in denying the

Black culture and humanity. Such policies implicitly assert that blackness is a problem that needs to be solved, instead of being a feature of people who have continuously been victimized by systemic racism (Sondel et al., 2022).

Consistent with the problem of antiblackness is the ideology of the White savior, which depicts the perception or belief that White people are capable of and responsible for saving people of color and other minorities (Sondel et al., 2022). In the context of education, some White teachers might perceive themselves as heroes, while students of color are perceived as troubled youth who need to be saved (Sondel et al., 2022). This phenomenon was reported by Black male students in a traditional public school within New Orleans (Grace & Nelson, 2019). The students stated that their teachers perceived them to be lacking academically, problematic behaviorally, and needing extra help to succeed. Although such educators may believe themselves to be well-meaning, this type of thinking is actually a form of bias that devalues students of color and may then negatively affect their self-esteem and self-confidence (Grace & Nelson, 2019).

The educator profession in the United States is comprised mostly of White individuals. Crutchfield et al. (2020) asserted that it is therefore unsurprising that these educators would favor White students, consciously or unconsciously. Such biases can be manifested in educators' expectations, evaluations, and disciplinary practices towards students (Crutchfield et al., 2020). What is surprising is the evidence of in-group negative biases from educators from minority groups (Copur-Gencturk et al., 2020; Stephens et al., 2022). Stephens et al.'s (2022) study conducted in New Zealand investigated the implicit biases of ethnic differences within a sample of student educators from European, Māori, Pasifika, and Asian ethnic groups. The Māori ethnic group, in particular, has been historically victimized by systemic racism and oppression by

European settlers since the 19th century (Stephens et al., 2022). Māori students were segregated in the past and provided with substandard curricula with the belief that they were more suited for manual work. The resulting stereotypical beliefs regarding the Māori appeared to have persisted as Māori surnames were associated with symbols of failure more than European surnames. The key finding of the study, however, was that participants who identified as Māori themselves still showed implicit bias by favoring European over Māori students with regard to academic achievement, albeit to a smaller degree than other participants (Stephens et al., 2022). More evidence of in-group negative bias was found in mathematics teachers from the United States, as non-White teachers predicted lower mathematical ability among Black or Latinx students compared to White students when asked to assess partially correct answers (Copur-Gencturk et al., 2020). It appears that the stereotypical views of minority groups have been ingrained long enough, even within the victims, that they tend to internalize such views.

Aside from implicit biases associated with race or ethnicity, there is also evidence pointing to implicit biases towards the female gender, higher weight, and lower socioeconomic status (Copur-Gencturk et al., 2020; Doyle et al., 2022; Finn et al., 2020; Lessard & Puhl, 2021; Nutter et al., 2019; Souchon et al., 2020; Yu, 2021). In the same study cited above regarding mathematical ability, White teachers also predicted lower mathematical abilities in female students compared to male students (Copur-Gencturk et al., 2020). This bias was significant despite the White teacher sample being composed of mainly female teachers, which once again shows internalized implicit bias this time for sex (Copur-Gencturk et al., 2020).

Although less attention has been given to weight bias compared to sex or racial bias, evidence for teachers' weight bias has been observed in teachers from kindergarten to high school levels (Finn et al., 2020; Lessard & Puhl, 2021; Nutter et al., 2019; Yu, 2021). Generally, children who are overweight are perceived as lazy, less intelligent, less productive, and less socially desirable (Finn et al., 2020). In their large-scale study across the United States, Yu (2021) found that being overweight or obese in the first grade was significantly related to negative teacher evaluations in non-cognitive skills. Such perceptions tended to be transferred to reading and mathematics scores at the second grade. This effect was particularly pronounced for female students, which highlights the gendered stereotype of obesity being unfeminine (Yu, 2021). In middle and high school, weight bias also appears to influence teachers' judgment, as evinced in a sample of 133 teachers from the United States who, in most instances, were likelier to give significantly lower scores for essay neatness and overall essay grades to overweight students than to students who were not overweight (Finn et al., 2020). These teachers also perceived that overweight students exerted more effort in writing the essay and gave more recommendations for remedial help to overweight students (Finn et al., 2020). To add to these manifestations of bias toward overweight students, there is also a pervasive belief that children are at fault for their weight, and that they are all self-indulgent with limited will power or self-control (Lessard & Puhl, 2021; Nutter et al., 2019). Placing the blame on children and evaluating them negatively because of their weight can be yet another source of poor self-esteem and low self-confidence in the children.

Socioeconomic status (SES) is yet another social category that can be the object of implicit biases. In a study of British teachers' judgments about hypothetical student profiles, teachers provided significantly higher ratings to higher SES than lower SES students, resulting in a 4.4% grading difference between the two SES groups (Doyle et al., 2022). Similar findings were reported in a French study in which high school teachers mostly believed that students of high SES were more likely to succeed than students of low SES (Souchon et al., 2020). Ricciardi et al. (2020) also identified poverty as one of the significant negative predictors of being labeled as gifted in American public-school settings. It should be noted, however, that this effect became nonsignificant when the factor of school readiness was considered (Ricciardi et al., 2020). Overall, one still cannot discount the possibility of SES-related biases in educators.

The existence of implicit biases within schools makes students and staff less likely to meet their potential. When faced with microaggressions and/or overt aggressive racism, a member of the school community is impacted detrimentally, regardless of the initiator's intention (Singleton, 2013). Microaggressions were defined as normalized and often passive offenses based on characteristics outside of one's own control (Sue et al., 2007). Examples of such microaggressions include constantly mispronouncing names, assumptions associated with race, questioning one's language competency, and offering less support or unfavorable placements (Compton-Lilly, 2020; Pearce, 2019).

Because microaggressions are often subtle or ambiguous, victims of microaggressions are made to think and feel that they are overreacting when they confront and name it (Pearce, 2019). Calling out microaggressions is often perceived to be dangerous, with victims stating that one must be absolutely certain that an act was a microaggression directed towards a social group rather than individually towards them. Despite the subtlety of these acts, however, their cumulative effects have been found to have lasting and damaging effects on young people's self-perceptions (Pearce, 2019; Sue et al., 2007). For instance, Black male students in Grace and Nelson's (2019) study shared that their experiences with microaggressions made them feel ostracized, and therefore, less connected to the school.

Manifestations of bias within schools, whether implicit or explicit, micro, or macro, can have deleterious effects on their victims. From harmful policies (Marcucci, 2020; Sondel et al.,

2022) to educators' individual biases (Copur-Gencturk et al., 2020; Doyle et al., 2022; Finn et al., 2020; Lessard & Puhl, 2021; Nutter et al., 2019; Souchon et al., 2020; Stephens et al., 2022; Yu, 2021), different types of biases occur within the school setting that may or may not be fully recognized by educators. The implications of such biases in educators' practices are discussed in the following section.

Implications of Bias in Practice

As adults with whom students spend most of their time, following their caregivers, educators can have a significant impact on students' lives. Educators' perceptions of their students may serve as either motivators or barriers to student success (Grace & Nelson, 2019). Students can generally tell if their teachers hold poor perceptions of them. Such negative dispositions could then negatively affect students' self-perceptions and motivations, as well as their interactions and engagement with their teachers and with education in general (Grace & Nelson, 2019). Educators' biases have been associated with poor student outcomes and phenomena such as the school-to-prison pipeline, a metaphor which depicts how Black male students are subsequently incarcerated at disproportionate rates (Crutchfield et al., 2020; Grace & Nelson, 2019). It is therefore important for educators to be mindful of their biases and the influence of these perspectives on the practice of education.

One of the most frequently cited implications of educator bias is the disproportionality of disciplinary consequences among student subgroups (Chin et al., 2020; Crutchfield et al., 2020; Grace & Nelson, 2019; Marcucci, 2020). The school-to-prison pipeline is just one example of the impact of biased disciplinary practices (Crutchfield et al., 2002; Grace & Nelson, 2019). Rather than providing safe spaces for students to learn in school, exclusionary disciplinary practices are enforced to keep students out of school (Grace & Nelson, 2019). Crutchfield et al. (2020)

reported that Black students were thrice as likely than their White peers to be suspended or expelled, and that Black and Latinx students comprise 50% of students who are referred to law enforcement by school officials even though they are the minority in schools. Within the academic year 2013-2014 alone, more than 500,000 Black male students in the United States were suspended from school (Marcucci, 2020). Chin et al. (2020) found evidence connecting such racial disparities in suspensions to educators' implicit and explicit biases. They compared Implicit Association Test (IAT) scores of educators from various counties across the United States and found that counties with higher IAT scores had increased disparities in suspensions between White and Black students (Chin et al., 2020). These practices exacerbate the racial disparities in the school-to-prison pipeline, setting students of color up for failure.

Educator biases may also impact how educators offer students advancement opportunities. Students in schools who exhibit appropriate behavioral manifestations such as effort and an ability to fit in to behavioral norms of the dominant culture are often deemed more academically proficient or even gifted as compared to less compliant students with similar academic aptitude (Francis & Darity, 2021). The contrary has also been determined to be true by researchers. Academically able students who fail to conform to traditional models of behavior fail to be judged as proficient or higher (Jamain et al., 2021). As an example, Ricciardi et al. (2020) examined the rates of being identified as gifted and indicated that White and Asian students had an identification rate of 28.8%, far from the rates of Latinx students at 14.8% and Black students at 10.3%. Furthermore, White, and Asian students were often identified as gifted around 0.37 grade levels earlier than their Black peers and 0.14 grade levels earlier than their Latinx peers (Ricciardi et al., 2020). Given the predominant racial stereotypes that may influence educator biases, students of color are often disregarded as candidates for giftedness.

Conversely, there is also a racial disparity in the rates at which students are referred to special education (Compton-Lilly, 2020; Crutchfield et al., 2020). Latinx and Black students were reported to be thrice as likely as their White peers to be identified as having special needs (Crutchfield et al., 2020). Furthermore, Latinx and Black students receive recommendations for alternative tracks in lieu of a high school diploma more often than their White peers (Crutchfield et al., 2020). Some Black parents have raised concerns regarding these special education policies, particularly the No Child Left Behind policy, which at the time of the study, was the educational act that placed an emphasis on academic competitiveness and achievement (Compton-Lilly, 2020). Black parents believed that such laws were not in Black students' best interests as they promoted resegregation and placed Black students at a disadvantage when they are separated and given subpar curricula and education in general (Compton-Lilly, 2020).

The No Child Left Behind act and its successor have placed great emphasis on standardized testing as a measure of success (Compton-Lilly, 2020). Standardized testing has been cited as a product of assimilation, emphasizing the White cultural norm of meritocracy (Sondel et al., 2022). A rigid focus on test preparation based on White norms has the consequence of diminishing the identity and culture of students of color (Sondel et al., 2022). A Black parent in Compton-Lilly's (2020) study shared that standardized testing increased the risks of dropping out as it increased the difficulty of graduating for minority students. Standardized testing was also found to interfere with other opportunities, such as when a student was dismissed from the step team for missing practices due to test preparations (Compton-Lilly, 2020). Other forms of assimilation included correcting Black vernacular and labeling such language as unprofessional (Sondel et al., 2022). These types of practices reflect the implicit bias that the White culture was the only correct one (Sondel et al., 2022).

One result of assimilation practices is Black students' feelings of being too restricted or controlled in schools (Sondel et al., 2022). Black students have been harshly penalized for the simplest of behaviors such as talking in hallways or violating the dress code. When asked about such policies, a school principal shared that emphasizing order and eliminating even the smallest infractions would lead to lower levels of crime. The principal further stated that the slightest deviation from their prescribed behavioral expectations made some educators feel unsafe. This statement reflects the dehumanization of students, who are not allowed to express themselves, for the sake of educators' comfort. An example of such harsh controlling practices was having all students within a predominantly Black school line up in a certain position and move in uniformity at the command of the administrator when moving classes, akin to the procedures within a prison (Sondel et al., 2022).

Black students are also subject to hyper-surveillance in schools (Compton-Lilly, 2020). For instance, a black parent shared how their daughter always had a clean record in school but was suspected of being affiliated with a gang when her name appeared in a Myspace account related to a certain gang (Compton-Lilly, 2020). Black students in Grace and Nelson's (2019) study likewise expressed their feelings of being constantly attacked and needing to survive in school. The idea that Black students felt like they had to *survive* in school highlights the damages of practices such as hyper-surveillance and the excessive control over Black students.

In line with the above practices, the shifting standards of educators in terms of race also signifies an implication of bias in practice. Shifting standards are used to depict the unconscious comparison of students to the stereotypes attached to their social categories (Marcucci, 2020). For instance, educators may expect more misbehavior from a Black student simply because of the stereotypical association between criminality and being Black. As a result, educators react to a lesser degree to such misbehaviors in Black students when they do happen (Marcucci, 2020). Black students have shared how this affected their mindsets, requiring more caution from them and leading to disengagement and discouragement as they did not wish to exacerbate the already negative perceptions (Grace & Nelson, 2019). Shifting standards have also been observed in female students who mostly select vocational tracks rather than science or mathematics tracks as their confidence levels for science subjects have already been diminished in fear of confirming the negative sex stereotypes (Carlana, 2019).

Overall, these implications show how educators' biases may affect their practice, as well as the negative consequences of these biases on the students. The school-to-prison pipeline is a prime example of how biases may lead to detrimental and long-term outcomes for certain students whose future prospects may be compromised simply because of their race or gender (Crutchfield et al., 2002; Grace & Nelson, 2019). These practices are reinforced by certain unfavorable policies that promote resegregation and assimilation (Compton-Lilly, 2020; Sondel et al., 2022). Overcoming such biases should thus be a critical goal for educators.

Interventions for Reducing Bias in the Workplace

A significant body of recent scholarly studies of workplace bias training exists. Academics have extensively reviewed concepts such as sexual harassment and unconscious bias in efforts to increase productivity and harmony. Training that places a focus on empathy has been found more effective in attempting to temper workplace conflicts than trainings that are more policy driven (Roehling & Huang, 2017). Workplace Civility Training (WCT) has been offered as a promising alternative to traditional sexual harassment training for that reason. WCT creates opportunities to identify, practice, and apply positive behavioral skills. Researchers have determined that WCT better equips employees to demonstrate positive behaviors in the workplace environment as opposed to what to avoid. Thus, with less emphasis on punishment, WCT is more effective in creating a significantly more respectful workplace for those who are involved (Nagy & Curl-Nagy, 2019).

Other strategies have been developed and proposed in the literature (Arneback & Jämte, 2022). Arneback and Jämte (2022) arrived at six anti-racist approaches practiced by high school teachers in Sweden, including emancipatory, norm-critical, intercultural, interpersonal, democratic, and knowledge-centric behaviors and actions. Emancipatory action addresses internalized racism within students; norm-critical action promotes self-reflection and challenging norms; intercultural action involves fostering a space for intercultural acceptance and appreciation; democratic action promotes open dialogue; relational action is aimed at developing students' self-worth; and knowledge-focused action focuses on raising awareness and knowledge regarding racism. The issues related to bias within schools are so complex, however, that there is no single strategy that has been proven to address all these issues (Arneback & Jämte, 2022). What is commonly agreed upon is the need for educators to demonstrate and communicate the proper social behaviors to their students (Bayram Özdemir et al., 2022). If educators tolerate or are unaware of biased behaviors, students may perceive such inaction as acceptance of racism or ethnic victimization. Evidence from a quantitative study in Sweden showed that adolescent students were more likely to interfere with ethnic victimization when their teachers clearly emphasized that one should not show negative behaviors towards others based on their background (Bayram Özdemir et al., 2022). This finding further demonstrates that the change to reduce bias in the classroom starts with the educator. It is important that educators be vigilant in order to recognize and challenge their own biases (Sondel et al., 2022).

Bias exists in schools towards behaviors, regardless of other classifying factors, and, disappointingly, past researchers have shown that bias itself is extremely hard to curb (Stephens et al., 2022). Strategies to debias people typically fail over time. Many interventions attempted with human subjects do not show consistency in reducing explicit bias or implicit bias (Todd et al., 2019). Previous researchers have shown that the likelihood of bias affecting perception or actual decision-making is markedly reduced when the decision maker has more specific and individualistic background information about a situation or person (Okonofua et al., 2020). Teachers may be more likely to mitigate their bias when they have an opportunity to learn more about students' individual experiences that are different or paradoxical from their own (Okonofua et al., 2020).

Purposeful training to address biases may be highly effective in promoting equality within workplaces (Williamson & Foley, 2018). Data collected in a study of pediatric medical residents showed that 94% of highly skilled, intellectually gifted, and well-trained professionals thought that interactions between residents and patients were sometimes or often affected by implicit bias (Tsai & Michelson, 2020). However, the same study also indicated that training on implicit bias could meaningfully impact care; 67% of the responding residents reported that they thought confronting implicit bias during their training was either moderately or extremely important to making them better physicians (Tsai & Michelson, 2020).

In the field of education, bias reduction is especially important to better ensure that equal opportunities and fair evaluations are given to all students. In higher education, professors are usually in control of determining which of their students' research projects are supported, paid for, and ultimately get published. These professors, like all individuals, are subject to bias. Uniquely, it was found that the College of Chemistry at the University of California, Berkeley, showed no difference in submission rates for publication across various sub-groups (Mendoza-Denton et al., 2018). The authors asserted that due to the objective scoring rubric, which was blind to any gender or ethnic identifiers, the work was evaluated on its merits without bias. The researchers suggest that this type of rubric was made possible by the irrefutability of chemistry as opposed to a social science (Mendoza-Denton et al., 2018).

Similarly, data from K-12 mathematics teachers were indicative of teacher biases in more ambiguous situations (Copur-Gencturk et al., 2020). When students' solutions were clear and answers were completely correct, no differences were found in teachers' evaluations between students with different characteristics. However, when the solutions presented were more ambiguous, representing only partial correctness, teachers gave higher ratings of mathematical ability to White students compared to Black or Hispanic students (Copur-Gencturk et al., 2020). These findings highlight the importance of objectivity in mitigating educators' biases. Although it may be impossible to have completely objective criteria or rubrics for all subject matters, it may be helpful to train educators to be mindful of their biases to avoid subjective evaluations.

Even outside of grading and evaluations, it is important for educators, and the school as a whole, to foster a safe and inclusive environment where all students can feel involved and supported (Crutchfield et al., 2020; Mulvey et al., 2021). When students feel excluded or treated differently in school, it may negatively affect their engagement (Mulvey et al., 2021). In their Swedish study, Bayram Özdemir et al. (2022) found that adolescent students were more likely to comfort victims of ethnic biases when they are in classrooms that promote openness to diversity and inter-ethnic contact norms. Educators may form such intercultural norms and processes in their lessons and activities (Arneback & Jämte, 2022). For instance, teachers may facilitate meetings and group activities between students with different cultural backgrounds (Arneback &

Jämte, 2022). Educators may thus be trained to come up with various strategies to improve intercultural awareness and openness in their classrooms.

Since the biases discussed earlier often are often manifested in the devaluation or dehumanization of minority students, it is also important to train educators regarding teaching and disciplinary practices that are restorative and humanizing. Rather than punishing students or excluding them for their behaviors, teachers could try rehabilitative disciplinary practices such as having a refocus area or a buddy teacher for students (Marcucci, 2020). On a similar note, a high school teacher in Arneback and Jämte's (2022) study shared how their students appreciated democratic and deliberative dialogues regarding moral or political issues that allowed them to talk as human to human rather than as teacher to student. These practices were purported to not only treat students with more humanity but also to increase positive interactions between students and teachers that could reduce the teachers' biases (Marcucci, 2020). Such restorative and humanizing practices may thus be vital parts of teacher training.

Students of color, particularly male Black students, have expressed their need for teachers with similar traits who could serve as their mentors in school (Grace & Nelson, 2019). Having someone who has successfully overcome the same issues that the students are experiencing would be helpful in motivating and guiding students (Grace & Nelson, 2019). This does not mean that White female teachers or other teachers who do not share the same characteristics as their students, are not able to positively relate to and impact their students. Such teachers could still build positive relationships with their students by showing empathy, respect, and harmony (Arneback & Jämte, 2022; Mulvey et al., 2021). It might still be more helpful, however, to increase minority representation in the faculty.

Aside from increasing representation, other top-level policy changes have been recommended in the literature. The promotion of a safe and inclusive space should begin at the policy level and be modeled by senior leaders (Lessard & Puhl, 2021; Sondel et al., 2022). For instance, Lessard and Puhl (2021) found that weight bias was less salient in teachers who worked in schools with anti-bullying policies that include weight bias issues. Conversely, in the no excuses charter schools, teachers are forced to comply with the harsh policies of the school or risk losing their jobs. Even if teachers themselves do not hold implicit biases, top-level policies may require their compliance to explicit practices of bias (Sondel et al., 2022). Upholding the safe and inclusive school environment should thus be emphasized across the whole school.

Another top-level issue that needs to be addressed to reduce bias in schools is the high levels of stress experienced by educators (Marcucci, 2020; Priest et al., 2020). As was mentioned earlier, educators are often given too much work and experience a significant amount of stress; these pressures leave them little energy and time to be vigilant over their implicit biases (Marcucci, 2020). These work demands also leave little room for teacher training and interventions (Priest et al., 2020). Restructuring the profession of educators may be necessary to enable more time and energy for intensive training and for self-reflection (Marcucci, 2020; Priest et al., 2020).

Once top-level policies and structures are optimized, teacher training and interventions to reduce bias are more likely to commence. Bystander training, in particular, has been recommended for promoting a safe school environment (Priest et al., 2020). In Priest et al.'s (2020) Australian study, the bystander intervention took a whole-school approach that involved teacher training, school policies, student support, parent and community involvement, and constant monitoring of racial discrimination. This intervention was well-received by students and teachers alike, and reportedly improved the inter-ethnic climate within the schools. The effects of the intervention, however, appeared to be short term and on a micro level, as there were few comments regarding the systemic and institutional scale of racism (Priest et al., 2020). Follow up sessions may be required, as well as a greater focus on macro-level issues of racism and other biases. Mindfulness training was also cited as a potential intervention for bias reduction, enhancing teachers' awareness and regulatory processes (Hirshberg et al., 2022). Mindfulness exercises, such as breath awareness and meditation, were perceived to be effective in allowing teachers to be aware, reflect, and work on their implicit biases (Hirshberg et al., 2022). To add to these interventions, Pearce (2019) further suggested that to foster greater understanding of how seemingly minor manifestations of bias can have cumulative effects, it would be useful to open up conversations about actual anecdotes of microaggressions from students and how these acts affect them.

Although more evidence for such interventions is needed, these recommendations represent potential strategies for bias reduction in schools. Educators should be trained to foster a safe and inclusive environment for all their students (Crutchfield et al., 2020; Mulvey et al., 2021), to implement restorative and humanizing practices (Marcucci, 2020), and to build positive relationships with their students (Arneback & Jämte, 2022; Mulvey et al., 2021). Furthermore, top-level policy changes should be implemented to reduce or eliminate bias at a macro level (Lessard & Puhl, 2021; Marcucci, 2020; Priest et al., 2020; Sondel et al., 2022). In the following section, the specific medium of virtual reality training is explored as an option for such interventions.

Virtual Reality Training

Understanding that research supports the existence of bias, the harmful effects of bias, and the perceived effectiveness of bias training in various fields, it may be worthwhile to gather perspectives from educators regarding implicit bias training that incorporates immersive virtual reality technology to determine perceived benefits to their professional practice. Findings from previous studies have been used to develop a sound argument for the incorporation of virtual reality as a method for workplace training to improve safety (Dhalmahapatra et al., 2021). Virtual reality workplace training applications were originally simulators to improve the management of life-or-death scenarios for pilots, first-responders, military personnel, surgeons, and heavy equipment operators, while keeping them and other people safe from actual physical harm. The VR trainings have now been adapted to more mundane tasks such as customer interaction training by corporations in an attempt to increase comprehension and engagement. VR intervention has potential for tackling workplace bias and harassment, as it may help individuals build empathy by seeing, in a limited manner, what it is like to be a different gender or race (Jacobs, 2019).

Virtual reality allows users to experience embodiment, placing them as participants in a scenario rather than as mere observers (Crone & Kallen, 2022; Haghanikar & Hooper, 2021). Such experiences were purported to enhance in-group affiliation, reduce negative out-group perceptions, and improve empathy in users (Crone & Kallen, 2022). Participants of VR training have commended the realism of VR, particularly in live-action versions, as making them feel more involved and attentive to the situation, something that can less often be said for reading books or watching videos (Beverly et al., 2022). The use of VR for trainings in general may thus be recommended for an enhanced and realistic experience.

In a 2019 study, 112 faculty and staff from the Zucker School of Medicine (ZSOM) participated in a VR racial bias workshop and were surveyed afterwards. The results point to the perceived effectiveness of the technology to improve workplace relations (Roswell et al., 2020). The respondents reported authenticity in the immersive experience and a high level of engagement. The vast majority (94.7%) agreed that the VR session was an effective tool for understanding the experiences of other people. A significant majority (85%) agreed that after participation, they could better empathize with some of the experiences of minorities in the United States. Finally, the majority (67.1%) reported that after the VR session and accompanying debriefing, they were likely to change their approach in communicating within ZSOM and in their life outside of medical school (Roswell et al., 2020).

Researchers in Cyprus and Switzerland tested a VR program that sought to allow user-teachers to learn classroom management techniques through trying and possibly failing in life-like situations within a virtual school space without the risk of doing any harm to real students (Stavroulia et al., 2019). Participants were immersed in virtual student fights, arguments, and acts of defiance while having their heart rate and blood pressure monitored. Though the researchers believed that their study was one of the first of its kind, they concluded through current literature and their own study that the incorporation of virtual reality training in teacher training is promising regarding its effectiveness in producing altered states both emotionally and physiologically while keeping students safe (Stavroulia et al., 2019).

A substantial number of researchers have highlighted the positive influence of VR training on empathy (Beverly et al., 2022; Crone & Kallen, 2022; Haghanikar & Hooper, 2021; Martingano et al., 2021). Based on a meta-analysis of 43 studies, Martingano et al. (2021) noted that VR training may be especially useful for enhancing emotional empathy, as the embodiment experience elicits emotions in the user. However, they also noted that VR training may not be as useful for enhancing cognitive empathy as the experience leaves little room for users' imagination and analysis (Martingano et al., 2021). The emotional effects of VR training were observed in Haghanikar and Hooper's (2021) research, which involved study participants experiencing homelessness in interactive VR scenarios. Certain situations, such as being confronted by a police officer for sleeping in a car, elicited significant reactions from the participants, with many participants giving warnings to the VR character throughout the dangerous scenarios (Haghanikar & Hooper, 2021). Such emotional reactions were purported to be unique to the VR experience and its feature of embodiment (Haghanikar & Hooper, 2021; Martingano et al., 2021).

From highly immersive experiences to more subtle and simpler VR trainings, different types of VR have been purported to enhance empathy in their own ways (Beverly et al., 2022; Crone & Kallen, 2022). In the field of human resources, VR technology has been used to explore the issue of gender bias (Crone & Kallen, 2022). Participants conducted simulated interviews with job candidates using avatars that were either congruent or incongruent with their gender. The simulation itself involved a short and simple two-dimensional animation that was deliberately designed to be minimalistic to reduce distractions from the task. The effect on empathy was noted in the increased likelihood of male participants selecting female candidates when their avatars were female, and parallel findings with female participants, as compared to participants whose avatars were congruent with their own gender (Crone & Kallen, 2022). Moving to a more immersive type of VR, Beverly et al. (2022) examined the effects of cine-VR, which enabled users to immerse themselves within a live-action movie. The realism behind the cine-VR allowed participants to gain a deeper sense of what characters were feeling (Beverly et al., 2022). Participants commented that the experience felt as if they were really in the scene. A participant further stated that the cine-VR activated users' visual and auditory cortex, as well as their emotional centers, making it easier for them to remember the scenarios and the feelings involved (Beverly et al., 2022). These two completely different types of VR experiences highlight the impact of VR on users' empathy regardless of the definition or the details in the experience.

The ongoing COVID-19 pandemic has further interested corporations in VR training as face-to-face training has been suspended (Roepe, 2020). According to a recent study by global consulting firm Price Waterhouse Coopers (PwC), companies should consider the possibility of using VR to deliver training. They were particularly keen on its potential to teach soft skills like leadership, diversity, equity, inclusion, and the prevention of workplace harrasment (PwC, 2019). Another researcher cited COVID-19 as a catalyst for accelerating the acceptance of VR, which was considered highly beneficial for its immersive and private experience that often leads to certain revelations for participants (Zielinski, 2021).

A more historical issue in the field of education is data usage. Advancing from anecdotal stories, to reams of paper and filing cabinets, and then to spreadsheets and even graphics, data use in education is evolving (Farrell & Marsh, 2016). Teachers involved in VR training not only collect their own data through their virtual experiences, but such programs provide both formative updates and summative results after training is complete. This feedback and graphic representation have the potential to impact teachers' engagement and ultimately their student outcomes. Previous researchers have shown that teachers are most likely to use data that are fully experienced, such as classroom observations or VR immersion to influence instructional practices (Farrell & Marsh, 2016). Past users of VR have also noted that it was surprisingly easy to use and navigate, even for individuals who are not technologically savvy (Beverly et al., 2022). The convenience of VR training may thus be a vital advantage brought by this technology.

Teachers, like many in the human services fields, are stressed for time. They have a need to see value in a potential training activity for it to be effective. Considering that time that is spent not helping a child directly could be considered wasteful, educators are especially susceptible to resentment when training lacks a perceived purpose. The Utilization-Focused Evaluation framework that primes participants with possible benefits for the training they are about to partake in may be helpful in ensuring that participants in a study measuring VR training engagement or effectiveness know up front the potential benefits or problem to be mitigated prior to embarking on the experience (Patton, 2010).

Based on the limited evidence available, VR may serve as a potential medium for providing bias reduction training to educators. The unique VR feature of embodiment has been found to increase users' involvement and attention to the training (Beverly et al., 2022). Enhanced empathy has been particularly cited as a positive outcome of VR trainings (Beverly et al., 2022; Crone & Kallen, 2022; Haghanikar & Hooper, 2021; Martingano et al., 2021; Roswell et al., 2020). Such improvements in empathy could be a catalyst for reducing biases in schools, making VR a potentially effective tool for bias reduction training.

Summary

There seems to be a scholarly consensus that bias exists in American schools. The bias can be broken down into various subcategories and researchers have done so. The bias is not specifically limited to America nor to school employees but rather is pervasive where heterogeneous populations are served. Research exists to show the harmful effects of bias in schools and other professional settings. Limited research exists to show that some reduction bias interventions are more effective than others in eliminating bias in educators or mitigating their harmful effects. This is particularly the case with those interventions that infuse empathy and realistic examples. Virtual reality has been used to teach soft skills in workplace training and has some emerging research to support its effectiveness in countering bias. The perspectives of educators have been researched to some degree regarding VR and VR training in the school setting. However, I was unable in my review of the literature to find any example in the body of knowledge that pairs educators with VR bias remediation training to determine their perceptions regarding its effectiveness, need, or potential for student and school advancement.

CHAPTER 3: METHODOLOGY

Chapter Introduction

Biases are rooted in justifiable differences in races and cultures (Boas, 1938). In the educational setting, one of the reasons that disciplinary consequences are more frequently applied among non-majority students in a school may be implicit bias among staff (Carter et al., 2017). Implicit bias can play a part in judging the severity of a behavior and making judgments about students' punishment or consequences (Milner, 2013). In order to close discipline and academic disparities among subgroups of students, steps should be taken to recognize and mitigate implicit bias. To address these issues, the purpose of this qualitative exploratory research was to explore the perceptions of in-service public P-12 educators in the central region of North Carolina about the issues of racial and gender bias and effective bystander intervention techniques in an immersive VR training program.

In this chapter, I present the details of the methodology and procedures implemented in the study. The contents of the chapter include: (a) research design and rationale, (b) research question, (c) participants, (d) instrumentation, (e) data collection, (f) data analysis, (g) delimitations, and (h) assumptions. I present a summary of key points at the end of the chapter to transition to the next.

Research Design

Qualitative methodology was used for this study. A qualitative methodology is often used when there is a need to explore a topic in depth, especially when little is known about a given topic, by collecting data on perceptions and experiences of relevant individuals (Merriam, 2002; Mills & Birks, 2014). In this research, narrative discussions are needed rather than numerical values or statistics to provide in-depth explanation of answers to the research questions (Merriam

& Tisdell, 2015). For this study, a largely unexplored topic was the focus of the exploration. The topic of interest was the impact of training in implicit bias and bystander intervention techniques in an immersive VR training program. Perceptions of educators were gathered in order to explore this phenomenon and address the purpose of the study. Based on these descriptions of the study, a qualitative methodology is appropriate.

The research design was exploratory. In qualitative research, exploratory design is intended to illuminate how a phenomenon is manifested (Polit & Beck, 2012). Moreover, exploratory design is particularly useful in discovering the nature of lesser understood phenomenon (Polit & Beck, 2012). A qualitative exploratory design also allows for the exploration of a topic that has limited literature coverage (Hunter et al., 2019). In line with this, the study focused on the largely unexamined topic of the impact of training in implicit bias and bystander intervention techniques in an immersive VR training program. Moreover, an exploratory nature of investigation is warranted in addressing the purpose and answering the research questions of the study. Therefore, a qualitative exploratory design is appropriate for this research.

Research Questions

The primary research question asks the following: What are the perspectives of participating educators regarding virtual reality implicit bias training in their work? Four sub-questions are as follows and seek to investigate the aforementioned primary question in more depth and in a more specific context:

a. What are the perceptions of participating educators regarding the recognition of bias and its manifestation in their own workplace behaviors?

b. What are the perceptions of the participating educators regarding the implications of bias in dealing with conflict such as student behavior management or collegial interactions?

c. What are the perceptions of the participating educators regarding the implications of bias for teaching and learning activities such as instructional intervention, talent identification, and special education determinations?

d. How do educators describe the value of experiential types of PD in changing practice?

To address this purpose and answer the research questions, I conducted a qualitative exploratory study. After the study was approved by the North Carolina State Institutional Review Board (IRB) and superintendent permission was received through the execution of the agreement found in Appendix A, educators who agreed to participate in this study were exposed to an hour-long confidential VR session presented on an Oculus headset. The software is a commercially available product produced for the purpose of corporate training on bias identification and workplace harassment prevention as well as training for bystander intervention techniques.

Participants

The target population for this study included public educators in north-central North Carolina. I chose this population because their perceptions are relevant to addressing the purpose of this study. Moreover, in the purpose and research questions, public educators are explicitly mentioned as the persons of interest for this study. Therefore, choosing these individuals as members of the target population for this study enabled me to collect data that is relevant to answering the research questions. From this population, a sample of eight participants was obtained. Convenience sampling with a focus on appropriate demographic variability was used for the recruitment of participants. Convenience sampling is often used when recruiting participants based on who is available at the time of recruitment (Etikan et al., 2016). In this study, convenience sampling is appropriate because of the specific types of individuals who are needed in order to answer the research questions.

Each participant had to satisfy a set of eligibility criteria. For this study, the criteria for participant selection required that they (a) be full-time employees in a professional licensed role in a public primary or secondary school for the 2022-2023 school year, (b) routinely encounter decision junctures in which bias has the potential play a particularly negative role (e.g., a teacher dealing with subjective student behavior, instruction, and grading decisions or an administrator who deals with student behavior, teacher assignment, and teacher hiring and evaluation decisions) (c) be geographically located within the north-central region of North Carolina, (d) works in the lone chosen school district in north-central North Carolina, and (e) willing to participate in the approximately two-hour virtual reality session and the structured interview to follow. All three levels of K-12 schools, elementary, middle, and high school, were represented. Additionally, my participant pool sought to include representation from Black, Hispanic and Caucasian educators. Moreover, both male and female (biological) genders were represented in the participants. Participants eligible for study ranged from age 20 to 60 in order to represent different generations.

The sample size for qualitative studies is typically smaller than that of quantitative studies (Fowler & Lapp, 2019). Data saturation is the determinant of the sufficiency of sample size for this research (Braun & Clarke, 2021). The point of data saturation is reached when there are no new data points or new codes identified when adding data from new participants or sources (Guest et al., 2020; Hennic & Kaiser, 2021). In most qualitative studies, data saturation is reached with seven to fifteen participants (Vasileiou et al., 2018). For this study, the sample size was expected to be seven to ten participants. Data saturation occurred after eight participants were studied and no additional subjects were recruited beyond the initial sample size.

Table 3.1

Target Demographic Profile of Final Participant Group

Participants	Black	Hispanic	Caucasian	Totals
Female	1-2	1	1-2	3-5
Male	1-2	1	1-2	3-5
Totals	2-4	2	2-4	6-10

Research Topics

The phenomenon of interest for this study was the impact of training in implicit bias and bystander intervention techniques in an immersive VR training program. Based on the phenomenon, I collected data on perceptions of eligible public educators in north-central North Carolina about the impact of implicit bias and bystander intervention techniques. Implicit bias in this study refers to a subtle form of prejudice that is exhibited just below the level of conscious thought (Baron & Banaji, 2006). In this study, implicit bias refers to the kind of bias that happens without conscious thought (Arnold et al., 2017). Implicit bias can play a part in judging the severity of a behavior and making judgments about students' punishment or consequences (Milner, 2013). As for bystander intervention, this is technique wherein a person recognizes a potentially harmful situation and responds to positively influence the outcome (Priest et al., 2020). Bystander training, in particular, has been recommended for promoting a safe school environment (Priest et al., 2020). For this study, perceptions of bystander intervention were explored in the context of VR training program.

In Research Sub-Question A, the perceptions of participating educators regarding the recognition of bias and the perceptions of participating educators regarding the manifestation of bias in their own workplace behaviors were the focus. These perceptions were operationalized via the responses of participants to the questions in the interview protocol.

In Research Sub-Question B, the main concerns explored were the subject educators' perceptions of implications of bias in dealing with conflict with students or colleagues. This information was gleaned via the responses of participants to the questions in the interview protocol.

In Research Sub-Question C, the issues of interest were participant perceptions of the implications of bias. Teaching and learning activities, specifically instructional interventions, talent identification, and special education determinations were examined through the lens of bias. These concepts were operationalized via the responses of participants to the questions relevant in the interview protocol.

In Research Sub-Question D, the topics of inquiry were educators' descriptions of the value of experiential types of professional development in regard to changing professional practice relative to bias identification and intervention. These constructs were operationalized via the responses of participants to the questions relevant in the interview protocol.

Instrumentation

The main instrument for data collection was the researcher as the interviewer. However, I, as researcher, used an interview guide to aid in the conduct of interviews. The interview guide is composed of questions that I developed that are aligned with the research questions of the study. Each interview question is based on relevant literature about the topic of interest for this research. The interview guide is presented in Appendix B.

The literature regarding the manifestation of bias in the educational setting informed my development of the instrument, which I constructed in order to seek answers to previously unprobed questions. For instance, little research exists regarding specific techniques to build educator empathy regarding student or collegial experience of bias in the workplace. Additionally, Punctuated Equilibrium Theory supports the sudden renewed interest in bias remediation techniques. As for Dual Process Theory, the support is on the role of subconscious thought in bias display of individuals who consciously understand the irrationality and reprehensibility of racial and gender bias.

Data to answer Research Sub-question was derived from participants responses to interview Items A1-A5 in the Interview protocol (Appendix B). The answers to Research Sub-question b were derived from participants' responses to interview Items B1-B5. The answers to Research Sub-question c were derived from responses to interview Items C1-C6. The answers to Research Sub-question D were derived from responses to interview Items D1-D6.

Because the interview guide is researcher-developed, an expert review was conducted. An expert review is a process of assessing an interview guide in order to ensure that the questions to be asked are appropriate, relevant, unbiased, and complete (Yeong et al., 2018). This process is essential to improving the credibility of the study (Kyriazos & Stalikas, 2018). For this research, I asked a panel of three experts in the field of education and research to assess the interview questions based on (a) correct word usage, (b) ease of understanding, (c) relevance to the study, and (d) completeness in terms of addressing the research questions. The experts provided comments and feedback. An expert in the field of bias and its implications in K-12 educational settings was paramount to ensuring this process is carried out with fidelity. Review comments from the experts served as the basis for making warranted changes in the interview guide. The expert review panel procedural document is presented in Appendix C.

Data Collection

After approval from the Institutional Review Board (IRB), I obtained approval from the participating school district. I asked permission to conduct data collection and analysis with personnel who are eligible for this study. The site permission request template is presented in Appendix A.

Once site approval was obtained, I began inviting participants into the study. I distributed an electronic flyer via email to all instructional facilitators in the school district. In the flyers, the purpose of the study and the intent to invite interested individuals as participants was provided. Additionally, specific language that addresses the study’s interest in racial, ethnic, age, and gender diversity were provided. All interested participants were asked to send me an email stating their willingness to participate. I replied to those who were interested with a demographic screening electronic survey that collected information regarding race, gender, ethnicity, age, role in the school, and level of school for which they were employed. Sixty-eight individuals responded to the electronic screening survey within the allowed timeframe. After sorting the responses for maximum variation and diversity, I considered 12 respondents to be my target participants based on their demographic characteristics. This process allowed for variation sampling that would provide a representative group of participants consistent with the target set in the research design. I sent an email containing the informed consent form to 12 individuals who fit the criteria and who would enable me to secure the demographic targets for participants outlined in Table 3.1. The first eight respondents to return their forms were selected for the study.

I followed the selection process by sending each prospective participant an introductory email and sample informed consent document. This consent document included the information about the purpose of the study, scope of participation, confidentiality agreement, voluntary nature of participation, recording of interviews, and information regarding the minimal risk in participation. All those who agreed with the contents of the consent form were asked to sign the form and send the signed copy to me via email. Only those who are eligible and have signed the consent form were considered as participants of this study. Because I had more interest from prospective participants than I planned to include I selected final participants who met eligibility criteria and who provided maximum demographic variation by scheduling research based on the perspective subject's timeliness in responding with a completed informed consent form.

I set up user accounts for each participant through the VR training portal. I then scheduled a day for each participant to complete the training session and participate in an interview. Pseudonyms were used during the interview and in the resulting reporting to protect the confidentiality of participating educators. All three levels of schools, elementary, middle, and high school, were represented. Both male and female educators were included. Additionally, there was final representation among Black and Caucasian educators. Due to the sensitive nature of bias exploration, extreme care was taken to uphold the highest standards of professional ethics during the research.

After each participant completed the training module, I examined their perceptions both broadly related to implicit bias and bystander intervention in the school setting. I further gauged their perceptions of the perceived value of virtual reality training modules in their own work. Characters in the simulated realistic workplace behave in various manners to illustrate bias and harassment. The training required participants to respond to prompts in the program that determine what the characters do next. A follow-up fictional human resources administrator provides participants feedback on their actions and judgments of the virtual interactions that they witnessed.

An example of how the VR technology exposes the participant to workplace bias and options for bystander intervention is given in the following description of a scenario from the training. The participant, upon putting on the VR goggles and beginning the training finds themselves emersed in a virtual office Christmas party. The room feels modern and corporate but also has a small bar and a table of festive snacks. As the participant moves their head around, they are emersed in their virtual environment and can see and hear their surroundings in a life-like way, including a 360-degree full turn and up and down frame of vision that correlates to standard real-life vision. After allowing a moment for the participant to become aware of their surrounding and even notice details, the program's actors pull the subject into an ongoing conversation being held by other co-workers. The conversation begins as benign but quickly turns racially charged as a White actor makes an inappropriate joke regarding a Black actor's preference in food and drink. Sensing the Black actor's disapproval, the virtual White colleague looks towards the participant and says, "You know what I mean, it's just how they are." The participant is pulled out of the scene and presented with multiple choice responses for potential ways to react. Based on the reaction chosen, the scene continues in a specific way. More incidents happen and more decisions are made. By requiring a choice to be made by the participant, the training module forces some type of bystander intervention and offers multiple options. Different environments and characters are introduced. All of this takes place in a corporate, not school-specific, environment. The training session concludes with a call from a virtual human resources professional highlighting positive and negative aspects of the participant's interaction with the virtual co-workers. Additionally, areas of improvement and other best-practice concepts regarding workplace bias identification and remediation are explored in a non-judgmental way by the VR human resources professional.

After the training, I conducted a semi-structured interview in which I asked the participant a series of questions to better gauge their understanding of their own perceptions regarding implicit biases in schools and perceptions regarding the degree to which and the ways in which the training is valuable. All interviews were conducted online via Zoom on the secure platform hosted by North Carolina State University. I used the audio record and transcript functions to record the interview. I did not use the video record function. I used a qualitative interview protocol (Appendix B). I used the participants' pseudonyms during the interviews. The interview protocol includes a demographic information assessment of each participant. This allowed me to look for trends, commonalities, and differences in responses.

I chose a qualitative interview process so that I could gain input and authentic responses from educators regarding their opinions of the concepts of implicit bias and the virtual reality exposure and intervention training. The interviews were conducted immediately following the exposure to the VR training module. This ensured that participant experiences are fresh and easily remembered and further ensured that only the previously noted two hours of their time, all on a single day, are required.

The interview protocol in Appendix B also includes items that addressed the different sub-questions. I asked these questions as noted in the interview guide. Throughout the interview process I provided all participants the opportunity to elaborate on their understandings of implicit bias implications, mitigation efforts, and workplace ramifications. Several interview questions had a follow up IPA component to judge participant perception of the concept of the question's importance. Additionally, the conceptual frameworks of PET and DPT informed and served as a reasoning for some of the phenomenon explored in some research questions. Each participant received a $50 Visa gift card upon completion of the data collection process.

Data Analysis

After each interview, I transcribed the interview session using a commercial transcription program. However, after generating the transcript automatically, I checked for errors in transcription and correct these errors. I then wrote an initial interpretation of the data from each participant.

After transcription, I analyzed the data using thematic analysis. The steps followed were consistent with those outlined by Braun and Clarke (2012). The steps for analysis are: (a) data familiarization, (b) coding, (c) initial theme development, (d) theme revision, (e) theme finalization, and (f) report generation (Braun & Clarke, 2012). In the first step, I read all the interview transcription data at least two times. For each round of reading, I highlighted descriptive texts, which are relevant words or phrases that have a direct relationship to the research questions of the study. In the second step, I began assigning codes to each of the descriptive texts identified in step one. I also determined in this step if data saturation has been reached if no new codes are identified with the addition of interview data to be coded. In the third step, I grouped similar codes together. These groups form the initial themes. In the fourth step, I identified relationships between themes based on the answers of participants. I also determined if themes may be decomposed to smaller themes or combined into one theme to have a more cohesive answer to the research questions. In the fifth step, I finalized and labeled the themes. In the sixth step, I discussed the analysis process and the results as a report. This report is presented as the content of chapter 4.

Subjectivity Statement

I, as the researcher, was the main instrument of data collection for this study. As the main instrument of data collection, I performed recruitment, interviews, and thematic analysis. During the recruitment, my role involved asking for site permission, inviting potential participants, obtaining informed consent from participants, and scheduling data collection and interviews. During this phase, my role was to ensure that conflicts of interest were minimized. Therefore, I did not recruit friends, family members, relatives, or colleagues whom I supervise to be participants of this study. In this manner, increased familiarity or possible power relationships between the researcher and participant were avoided; I thus minimized the influences of unwanted personal biases in conducting this research.

During the data collection, I was the interviewer. During the interview, I used an interview guide when asking questions from the participants. The interview guide was expert-reviewed to ensure that I was asking the correct questions in an appropriate manner. As a person, researchers have personal biases. When using an interview guide, I was able to minimize the possibility of asking biased or leading questions, which may have negative impacts on the credibility of the study if left unaddressed.

During the analysis, I processed and coded the interview data using thematic analysis. To avoid the influences of personal biases, I acknowledged any opinions, beliefs, or expectations that I had in relation to the topic being explored and the outcome of this study. In this manner, I was cautious when analyzing the data by ensuring that any interpretation or conclusion I made was based on actual data from participants rather than on my own personal expected outputs or beliefs.

I also performed reflexive journaling to address potential personal biases. Reflexivity involves personal examination of own preconceptions about the phenomenon and how these affect research decisions in all stages of the study (Daniel, 2019; Lincoln & Guba, 1985). In this process, I wrote notes and reflections in a journal throughout the data collection process. This information was useful in identifying potential sources of bias and personal opinions that may have had unwanted impact on the findings. By journaling, I was able to become aware of personal biases that needed to be avoided during data collection.

Ethical Considerations

Effective professional evaluation practices suggest that cultural competence is paramount during research. This advice is ever more salient when conducting research and evaluations that directly address and involve race, gender, sexuality, and cultural differences in the actual research itself. The Centers for Disease Control and Prevention (CDC) has published a 32-page practitioners guide for conducting culturally competent research and evaluation. First and foremost, the researcher's own cultural self-awareness should be assessed. Knowing oneself and recognizing how one views those who are different is important to ensure bias free results. The CDC purports that researchers should take time to think about personal experiences and background to better uncover their own biases and assumptions in order to conduct more meaningful research (U.S. Department of Health and Human Services & Centers for Disease Control and Prevention, 2014). Because worldview can be shaped by multiple factors such as the triple influence of race, gender, and social class, intersectional identities may fuel strong propensities for certain behaviors such as caring (Bass, 2009). Therefore, it is particularly important that a researcher who attempts to gather information in a qualitative or quantitative way seek to understand their privilege, reference points, and do the same for subjects.

Additionally, I employed the recommendations in the Guiding Principles for Evaluators, published by the American Evaluation Association (AEA), which specifically spell out the importance of evaluators contributing to the common good and advancement of an equitable and just society (American Evaluation Association, n.d.). Clearly, research that seeks to, at a minimum, bring awareness to and hopeful mitigation of racial, gender, sexuality, or cultural bias in the workplace needs to do just that.

I also, as is noted previously, addressed the ethical issue of confidentiality. I used pseudonyms to protect the identity of the participants. I also used these pseudonyms when referring to participants in the results discussion for this study. I also was sensitive to context clues that might inadvertently suggest the identity of a participant. Therefore, I am the only one who knows the identity of each participant.

I ensured data security. To do that I began by consulting with the staff in the College of Education technology department regarding data security. I also stored all the data properly. I kept all physical data and documents used for this study in a locked cabinet inside my home. I also stored all electronic files in a password-protected storage drive. This device was placed inside the same locked cabinet where the other documents were stored. I plan to keep all the data for 5 years, except for the audio recording files, which I permanently deleted from my hard disk immediately after accomplishing the final revisions of the study. After 5 years, I will burn all the physical documents and format the storage drive to permanently delete all the electronic files pertaining to this study.

I used a proprietary product to conduct the VR training. One of the principals for the company was a student in my class during my first year as high school teacher in 2010. The technology and VR program was originally purchased using public funds of $1,500.00 to provide in-house professional development in 2020 to the alternative public middle school staff of which I was assigned as an administrator. No data from that professional development experience was stored or was used in this research. However, I have no financial or other formal relationship with this organization. Minimal ethical issues exist that may have affected the conduct of this study and the use of the VR training for this research.

Delimitations

Delimitations are aspects of study implementation that the researcher controls to define the boundaries of the study (Theofanidis & Fountouki, 2018). In this study, the phenomenon of interest is the impact of training in implicit bias and bystander intervention techniques in an immersive VR training program. No other phenomenon to be explored because the problem is aligned with the chosen phenomenon.

The participants of the study included eight public educators. The locale of interest was confined to the central region of North Carolina. The criteria for inclusion required that participants be full-time employees in a professional licensed role in a public primary or secondary school for the 2022-2023 school year. These individuals have the relevant knowledge to provide useful information to address the research questions of the study. No other individuals were considered as participants of this study. Data was only collected using semi-structured interviews. No other data source was used for this study.

Assumptions

Assumptions are issues or ideas that are viewed as reasonable and widely accepted truths (Theofanidis & Fountouki, 2018). In a study, this construct is operationalized as those attributes of the participants and research context that are accepted by the researcher as true. The first assumption in this study was that participants' answer freely without fear of retribution for their perspectives. Moreover, I assumed that participants were truthful. I was required to make this assumption because I had no resources to completely verify the truth in all the information that the participants provided. Another assumption was that the participants have different perceptions and experiences, which may be revealed in the data. I had to make this assumption as one of the bases for ensuring data saturation in order to improve the credibility of the findings.

Summary

The purpose of this qualitative exploratory research was to explore the perceptions of in-service public P-12 educators in the central region of North Carolina about the issues of racial and gender bias and effective bystander intervention techniques in an immersive VR training program. In this chapter, the details of the methodology and design used to address the purpose were discussed. Qualitative exploratory research was implemented. Data was obtained from eight in-service public P-12 educators in the central region of North Carolina. These participants were recruited using convenience sampling with an attempt to attain maximum variability. Educators who agreed to participate in this study were exposed to a one-hour confidential VR session presented on an Oculus headset. Perceptions of these individuals were obtained using semi-structured interviews after the VR session. Data was analyzed using thematic analysis. The results of the study are presented in Chapter 4.

CHAPTER 4: FINDINGS

Chapter Introduction

Chapter 4 examines the perspectives held by professional educators within public schools concerning issues of racial and gender bias, as well as their perceptions of effective bystander intervention techniques. The subsequent sections present findings from the qualitative research that sought to address the central research question and its corresponding sub-questions. These segments outline the responses of each group of participants in relation to the respective research inquiries.

The primary objective of this study was to broaden the existing knowledge base through interviews with practicing professional educators, unveiling trends and patterns in their viewpoints across diverse demographic subgroups. The exploratory nature of the research facilitated an in-depth exploration of both the overarching research question pertaining to the viewpoints of participating educators regarding implicit bias training using virtual reality in their professional roles and the subsidiary questions that informed it.

Summary of Methods

Within the context of this research, qualitative investigation offered participants a platform to express their significant experiences using their own language. The study afforded participants the opportunity to articulate their viewpoints, beliefs, and understandings through interview sessions. Professional educators currently serving in schools participated in the study, sharing their insights, beliefs, and perspectives in response to open-ended interview questions, each of which was linked to a specific sub-question of the research.

The central research question inquired: What are the viewpoints of participating educators regarding implicit bias training using virtual reality in their professional roles? The research was deepened through four sub-questions, each designed to explore the central question within a more specific context:

a. What are the perceptions of participating educators regarding recognizing bias and its manifestation in their own workplace behaviors?
b. What are the perceptions of participating educators regarding the implications of bias when dealing with conflicts, such as managing student behavior or engaging in collegial interactions?
c. What are the perceptions of participating educators regarding the implications of bias in teaching and learning activities, such as instructional interventions, talent identification, and determinations in special education?
d. How do educators describe the value of experiential professional development in effecting changes in their practice?

Following each interview, I transcribed the session utilizing a commercially available transcription tool that is incorporated in the Zoom suite hosted by North Carolina State University. Subsequently, I carefully reviewed and rectified any transcription errors emerging from the automated transcript generation. This was followed by crafting an initial interpretation of the data gleaned from each participant. In the subsequent stages, a thematic analysis, in line with the methodological framework of Braun and Clarke (2012), was employed to analyze the data. This analytical process encompassed the steps of acquainting myself with the data, coding, preliminary theme formulation, refining themes, finalizing themes, and generating the ultimate report.

The VR training exposed participants to workplace bias through immersive scenarios. In one example, participants found themselves in a virtual office Christmas party with realistic surroundings. A conversation becomes racially charged, and the participant must choose how to react; the scenario thus forces bystander intervention. The training includes various environments and characters, all set in a corporate context. It concludes with feedback from a virtual HR professional, offering insights into workplace bias identification and remediation without judgment.

Participant Profiles

The study involved eight practicing K-12 educators who were selected through a recruitment process involving a digital flyer that contained a brief introduction to my research. For those interested in volunteering for the study, this flyer also included an online sign-up link for collecting pre-screening demographic information that included years of experience, school and grade level, gender, ethnicity, contact details, and any health condition that might preclude participation in a virtual reality training experience. The introductory material was distributed by email to all instructional facilitators in the chosen research district, with a request to share it with colleagues who were members of the professional staff in their schools. Prospective participants included teachers, counselors, social workers, administrators, psychologists, speech therapists, and other licensed school personnel. Once the sign-up deadline concluded, I selected a group of potential final participants. The prospective participants were contacted via email with instructions to review the informed consent document, sign it and return it if they were interested, and respond with three dates and times they would be available to participate. Additionally, they were asked to respond with a location at which they would like to complete the study. They were given the option of selecting any local public library convenient to their work or home. The research schedule was established based upon their preferences. When participants arrived at the library of their choosing, we identified each other by wearing our school-system issued identification. Introductions were exchanged and informed consent forms were either completed or verified. After a quick review of the user guide for the Oculus VR headset, participants began their virtual reality session in a quiet, simi-private location in the library.

After the VR session was completed and the VR headset prompted the participant to remove the hardware, I gave them an opportunity to take a brief break. Next, the participant and I set up a Zoom conference and I proceeded to engage with the individual using the interview guide. Once each interview was complete, the participant was thanked for their time and opinions and presented with a gift card as a token of appreciation.

Participant Bios

The focal group under consideration for this research consisted of educators employed by a single, large, diverse, metropolitan public-school unit situated in the central region of North Carolina. This selection was deliberate, as the viewpoints of a diverse group of individuals were needed to address the study's objectives. Furthermore, both the study's purpose and research inquiries explicitly centered around public educators. Thus, the rationale behind these choices was rooted in the pursuit of pertinent data for addressing the research questions.

As was noted in the previous section, a subset of eight participants was drawn through a representative convenience sampling approach. Convenience sampling, with an attempt to represent different demographics, is fitting in situations where participant recruitment is contingent on availability during the recruitment period (Etikan et al., 2016). Given the distinct characteristics sought in individuals to answer the research questions, a modified convenience sampling approach was suitable for this study. Table 4.1 provides the demographic characteristics of participants in the final sample.

Participants met the following specific eligibility criteria. Selection for this study necessitated that they: (a) hold full-time positions in a licensed professional capacity within a public primary or secondary school during the 2022-2023 academic year, (b) frequently encounter decision-making junctures where bias might have adverse implications (e.g., educators dealing with subjective aspects of student behavior, instructional practices, and grading; administrators managing student conduct, teacher assignments, and teacher assessment), (c) be geographically situated within the north-central zone of North Carolina, (d) be employed within the singular designated school district in north-central North Carolina, and (e) demonstrate willingness to engage in an approximately one-hour virtual reality session followed by a structured interview. In terms of age, the participants spanned from 27 to 56 years, thereby encompassing diverse generational perspectives. Representatives across both elementary and secondary levels were included. Furthermore, as demonstrated by Table 4.1, the final participant pool encompassed Black and Caucasian educators, as well males and females.

Table 4.1

Demographic Profile of Final Participant Group (table content should also be in Times New Roman font.) I'm not sure why you include a column for a subgroup for which there were no participants.)

Participants	Black	Caucasian	Totals
Female	2	4	6
Male	1	1	2
Totals	3	5	8

Participant A – Jane

Participant A was a 56-year-old Black female. She had taught at the secondary level prior to becoming a secondary administrator 15 years ago. She had been a professional public educator for 33 years. This participant's pseudonym was Jane.

Participant B – James

Participant B was a 33-year-old White male. He taught at the secondary level and had done so for 10 years. He had completed 10 years of service as a professional public-school educator. This participant's pseudonym was James.

Participant C- Paige

Participant C was a 35-year-old White female. She was beginning her 13th year of service as a professional public-school educator. She previously taught 4 years at the elementary level and was teaching at the secondary level at the time of the interview. This participant's pseudonym was Paige.

Participant D- Hannah

Participant D was a 27-year-old White female. She had completed 4 full years of service as a professional public educator in a classroom teaching role. All of those years had been at the elementary level. This participant's pseudonym was Hannah.

Participant E- Mary

Participant E was a professional public elementary level educator. She had worked at the elementary level as a classroom teacher for the entirety of her 18-year career. She was a 40-year-old White female. This participant's pseudonym was Mary.

Participant F- Carrie

Participant F was a professional public-school educator in a licensed specialist role who had worked at the elementary level for 26 years. She was a 48-year-old White female. This participant's pseudonym was Carrie.

Participant G- Tatiana

Participant G was a 40-year-old Black female professional educator in a classroom teaching role. She served at the elementary level and had done so for 12 years. This participant's pseudonym was Tatiana.

Participant H- Bruce

Participant H was a 32-year-old Black male professional educator. He served in a classroom teaching capacity and had done so for the past 6 years. This participant's pseudonym was Bruce.

Research Questions

In this section, the primary research questions are reviewed. Answers to the research questions are presented based on themes that emerged from participant responses to interview questions. Direct quotes are presented along with general concepts and perceptions presented by participants. Though most research questions had themes that addressed the posed area of interest, some outliers existed and those opposing views are also explored. Quotes were attributable to individual participants, and they are presented in their words. Any redaction is limited to information that would breach confidentiality. The participants are referred to by their pseudonyms, along with some demographic detail.

Research Sub-Question A

Research Sub-Question A sought to gather perceptions of participating educators regarding the recognition of bias and its manifestations in their own workplace behaviors. Prior to asking interview questions, I read participants the text of the research sub-question to help them inform their answers. They were instructed not to answer the sub-research question, but I wanted them to hear it to aid them as they framed their thinking related to the subsequent interview questions. In order for me to gain understanding of the sub-question, I asked participants five open-ended interview questions, each of which was followed up by an open-ended question in which I inquired about the level of importance the participant attached to the concept presented in the corresponding interview question. A full list of interview questions and their importance follow-up questions can be found in Appendix B. By asking interview questions to inform the research sub-question, I sought to determine to what degree participants understood how to identify bias and how it might be manifested in their behaviors in the workplace. The follow-up importance questions sought to determine the degree that participants thought it relevant to understand bias and its manifestations in their own workplace behaviors.

There were five major themes that emerged as a result of the participant responses related to Research Sub-Question A; these themes helped me to form an answer to this research query. First, all participants had a basic understanding of bias and its potential to negatively impact students. Second, the vast majority of participants believed that biases that manifest in the school-setting are unconscious. Third, participants had a propensity to deflect when talking about their own possible biases and redirect responses towards other educators in general. Fourth, participants reported more awareness of biases that were likely to directly affect them due to their own demographic profile. Fifth and finally, all participants indicated that being aware of biases and their manifestations in school was important.

A Basic Understanding of Bias

The first interview question that I asked sought to determine what if any baseline level of understanding participants had about bias as a general concept. This question was met with answers that ranged from a basic understanding of bias in which the participant identified it broadly as the concept of judging people based on certain characteristics to more sophisticated definitions that not only identified various types of bias but, in one instance, also delineated the concept into two distinct categories, conscious (explicit) and unconscious (implicit). Hannah responded to Interview Question A1 in an advanced manner by stating the following, "Bias is something I have spent a lot of time studying. It was focused on in my teacher prep program. I'm familiar with all the typical bias like gender, socio-economic, racial…. I also understand that bias is generally broken into two types, explicit and implicit." Though all interviewees provided a functional basic definition of bias, Hannah was the only one who specifically addressed implicit, or unconscious, bias. Additionally, at 27 years of age, Hannah was the youngest participant. She had completed her teacher preparatory work just four years ago.

Paige, a veteran White female educator, seemed to purposefully avoid racial bias in her responses to the initial interview question. She never mentioned race in her response, but rather focused on socio-economic biases as well as biases related to student behavior. She said, "If a student has misbehaved before, I'm more likely to assume they will again." Additionally, she stated, "I know some people, having worked in a Title 1 school myself, don't expect the less affluent kids to be able to achieve."

James, Jane, Paige, Hannah, Bruce, and Mary indicated that they had had some training to both identify bias and mitigate its manifestation from their schools or district. Jane, the veteran administrator stated, “We talk about it district-wide and it trickles down into schools. I understand the general concepts; I think we know it’s bad. Most folks I deal with can get that far, but the work seems to have stopped short of concrete ways to mitigate it.” Bruce, the least verbose response to the initial baseline question articulated the following, “I’d say it has to do with stereotyping. You know, judging before knowing something about somebody.”

Self-Oriented Understanding of Bias

During data analysis I found an unexpected, though perhaps understandable, tendency of participants to focus on bias types that were likely to directly impact themselves. The biases that several participants spent the most time focusing on in their initial responses related to their understanding of bias manifestations in the workplace that were most directly related to themselves and their own demographic sub-groups. For instance, each of the Black participants identified racial bias as their first example of bias. Bruce, a relatively junior Black male educator with six years of service admitted to a limited understanding of bias but rather succinctly summed up his personal relationship with it by stating, “I’m no expert on bias but I know I’ve lived with it. I see how I’m viewed differently in schools and have to be careful how I present…. It’s not something I spend too much time thinking about unless it affects me directly day-to-day....” He went on further to say, “I feel like I’m viewed more as a disciplinarian and like I’m there to correct kids that look like me rather than for my academics.”

Age-related bias also followed a similar trend. A couple of younger participants acknowledged their age as a potential source of bias from colleagues. Their youth appeared to have been a trigger for them that brought up memories of bias they experienced personally.

Hannah said, “It’s been 5 years since I started here, and I’ve got a masters and some teachers make me feel like I’m a kid with things they say and how they discount me. That’s biased on their part.” Additionally, James, though ten years into his service as a professional educator, reminisced about how he was treated as a younger teacher. He said, “As a younger man, I know bias made people not respect me in my previous school. I didn’t feel like I was given a fair chance because I didn’t look like the older lady I replaced.” It appeared that he felt the impacts of bias related not only to his age but also his gender. He went on to say, “I think that males are looked at differently in schools and it’s compounded when they are younger.”

As I continued to delve deeper into interview questions it became clear that most respondents’ answers were self-reflective in nature. However, Tatiana, I veteran Black female educator who has spent nearly a decade working with predominantly east Asian students was well versed in understanding how her own biases had to be checked in order to effectively teach them. She stated, “I work at a school with a very large east Asian population and there are things that I had to get used to. Things that could seem offensive based on how I grew up are really culturally appropriate for them.”

Bias Driven by the Unconscious

As I continued to ask participants interview questions related to Research Sub-Question A, another theme emerged; this one related to their concepts of the origin of bias. When I probed subjects specifically about whether they believed that biased interactions with students by adults in the school were generally conscious or unconscious, all but one blamed biased interaction with students on an unconscious, or implicit, source. Typical responses seemed intended to absolve educators of consciously engaging in biased behaviors that negatively affected students. Participants were quick to come to the defense of the of educators; they offered nearly identical viewpoints that they did not believe anyone choosing to work in public education would purposefully seek to do harm to their students.

Mary illustrated this theme when she stated, “I just can’t believe that people come to work wanting to do wrong by kids. They’ve got to be unaware. People willing to be in this field have their heart in the right place or we wouldn’t be here.” The benevolence that participants generally attributed to educators when I interviewed them seemed to cause them to assume that unconscious bias was the only logical cause for the bias they admitted to having seen regularly demonstrated by colleagues.

One notable outlier to participants’ tendency to absolve educators of conscious bias was noted. Jane, who was the senior-most educator in the group, having served as a building administrator for nearly 2 decades, quickly addressed the root cause of bias displayed by educators to students by stating, “I’ve seen this too much. These folks are grown, they’re professionals, educated. They know what they’re doing to these kids. I think it’s conscious.” I find it worth noting that Jane, a Black female, was the only educator with supervisory responsibilities who was interviewed. She indicated that she had experienced bias from staff members and other adults in her career. She also stated, “Sometimes it’s worse from other Black females who I feel like I need to prove myself to, but I see them accept White administrators at face value. We can be our own worst critics.”

It’s Them, Not Me

Another theme that emerged through the analysis of interview transcripts was a tendency of respondents to deflect blame for the bias, which they freely admit exists, towards other educators rather than examining their own behaviors or thoughts. Carrie illustrated this phenomenon when she stated, “It’s not really me that’s the problem, but other need to learn…I don't consider myself biased. Maybe when I was younger, I had bias. Maybe others are… Definitely others." Though other participants' deflections of any admission of personal biases were not as poignant, most were just as discernible. Even the most recent teacher education graduate, Hannah, with the textbook answer on bias and an admission that she had studied its effects in graduate school, sought to absolve herself of personal manifestations of bias in her work. She stated, "It's really important with me that I check my biases. I don't really have any but possibly religious, and that doesn't really impact my work."

Though research, as explored in Chapter 2 of this study, is strongly supportive of the idea of implicit, or unconscious, bias existing within nearly everyone, participants hesitated or avoided exploring their own biases even in the carefully constructed anonymous research environment with strict ethical considerations in place. It is generally accepted that in order for behavioral changes to take place acknowledgement is a first step. The subjects I interviewed displayed hesitance to acknowledge their own personal biases and to even hypothetically discuss how they might impact their students or colleagues.

Bias Matters

Juxtaposed with the preceding theme of bias being "other people's problem," another telling theme emerged. All participants reported that bias and its manifestations in their work, or the work of others, was important. Most participants expounded on the negative effects that they had seen bias cause on children's' life trajectories. Examples included over-identification in special education programs, discipline disparities, under-identification of students of color for gifted programming, and peer conflicts resulting in hostile work environments.

Even Carrie, the respondent whose answers veered sharply away from her own biases, communicated the importance of understanding bias when she stated, "Sometimes certain people’s students are treated differently based on who they are. It’s sad, but I’ve seen some get more attention and I think bias plays a role in that.” Paige stated, “I’ve seen it really snowball in a school. I’ve seen bias get out of hand because the majority of teachers I work with are White females from middle class families. We’ve got to check ourselves and look beyond the surface of these kids for opportunities, not excuses….”

Though my research was strictly qualitative in its methods, my interview questions that sought to determine participant perceptions regarding the importance of understanding bias and its manifestation in their schools yielded meaningful results conceptually framed to emulate the Importance Performance Indicator (IPA) tools used by quantitative researchers. Participant responses indicated that the topic was reported as important and worthy of exploration to the professional public-school educators sampled.

Sub-Question A of the research aimed to collect educators' perceptions regarding their awareness of bias and how it manifests in their workplace conduct. To delve into this sub-question, I conducted semi-structured interviews with participants. I posed five distinct questions, each followed by an inquiry about the importance they ascribed to the concepts discussed in those questions. The complete set of interview questions and corresponding importance follow-up questions are in Appendix B. These interviews were conducted to gauge the extent to which participants comprehended the identification of bias and its potential influence on their behaviors in the workplace.

In summary, through these interviews and importance rating questions, I sought to determine participants' awareness of bias and its manifestations, as well as the significance they attributed to this understanding in the context of their workplace conduct. The responses yielded the following five prominent themes that shed light on Research Sub-Question A. First, all subjects had a basic understanding of bias. Each displayed a fundamental understanding of bias and its potential to adversely affect students. Next, most participants believed that biases manifesting in the school environment were often unconscious. Additionally, participants tended to deflect discussions about their potential biases and redirected responses toward their colleagues rather than addressing their own biases directly. Also, participants reported being more conscious of biases likely to impact them directly, based on their own demographic characteristics. Finally, all participants emphasized the importance of being aware of biases and their manifestations in the school setting. These findings collectively contributed to addressing Research Sub-Question A.

Research Sub-Question B

Research Sub-Question B sought to determine the perceptions of participating educators regarding the manifestation of bias when dealing with conflicts with unruly students or negative interactions with colleagues. To gain valuable insights into the sub-question, I asked the participants five open-ended questions. This was after front-loading the questions by way of reading participants the research sub-question that the interview questions were intended to enable me to answer. Additionally, immediately following the interview question I completed a qualitative adaptation of an Importance Performance Analysis (IPA). The IPA sought to determine how meaningful a particular concept was to a participant by asking them an open-ended question that inquired how important the previous concept was to them. A full list of interview questions and their importance follow-up questions can be found in Appendix B. When I asked interview questions, the questions sought to inform the research sub-question related to their perceptions regarding the implications of bias in dealing with conflict. The follow-up importance questions sought to determine the degree to which participants thought it relevant to understand the implications of bias specifically in dealing with conflicts, whether they were with students or colleagues.

During the course of my interview data coding and analysis, four themes emerged as a result of participant responses to interview questions. These themes helped me to form an answer to this research query. First, subjects overwhelmingly recognized that conflict in the workplace is not only inevitable, but also varied in nature. Second, multiple subjects reported instances of bias either causing conflict in their workplace and/or escalating it. Third, unconscious mental processes were blamed by nearly all participants for biased interactions with colleagues. Fourth and finally, subjects reported that understanding the role of biases in conflict was important whether pertaining to collegial interactions or student interactions. However, more importance was generally assigned to those conflicts where bias played a role in conflicts with students.

Conflict Exists at Work

During interviews and subsequent participant response reviews, one thing was certain. Each participant easily recalled instances of conflict at school. Those conflicts were generally discussed in two categories as delineated in the interview questions. Conflict between students and conflict between staff were the two types of conflict inquired about through the interview question. Though parental or community conflict was not specifically inquired about, it was mentioned by a couple of participants. This, unsurprisingly, causing me to surmise that this category of interaction may also be a significant source of conflict.

Carrie spoke of conflict with students that was specifically related to behavior. She stated, “Most conflict I’ve delt with involves students not following rules. You know, acting out in ways.” She also discussed her conflicts with colleagues. She stated, “Conflict I have with colleagues is usually around time and respecting each other’s time. Meetings and stuff like that.”

Tatiana quickly identified types of conflicts she's had with both students and colleagues alike. Referring to colleagues she said, "Some people are easier to work with than others. Sometimes you just click with your teammates and sometimes you feel like you're a misfit or maybe someone else doesn't jive with the group." She also referenced those in supervisory positions and conflicts she's had with them in the past by saying, "Some administrators seem to be looking for problems and others try to build you up. If you feel like you're being picked at all the time for little stuff, that feels like conflict." She elaborated further by saying, "I've had parents complain about stuff that I don't think is a big deal and principals take that too far. Conflict with parents can happen and if I'm right, I expect a little support from my administrator."

Conversely, the administrator of the group, Jane, indicated that she'd seen teachers become confrontational with students and parents in her response. She stated, "Some teachers develop adversarial relationships with kids and families. That creates a lot of conflict and it's not productive. I try to stop that when I see it." She continued to illustrate the prolific nature of conflict in schools by saying, "Conflict is in our schools. Sometimes in my job I feel like I'm always fighting these conflicts, or I call them fires, that start. It's the nature of the work."

Though the responses were generally specific to school, one participant extrapolated the idea of conflict being present in any workplace and even generally amongst people. James stated, "I think people, especially if they are in groups that are not all the same, get into conflict. Jobs I've had outside of education have conflict. Even my family and friends have conflict, so I think it can be human nature."

All participants were eager to admit that conflict exists in their professional lives. There was consensus that conflict was a part of interaction among colleagues and with students. Each participant was easily able to come up with various examples of conflict. However, when asked about bias and its possible impact on those conflicts, the participants answers appeared to become more couched and less self-reflective, similar to a theme explained in Research Sub-Question A's results.

Bias Causing and Escalating Conflict

When asked about what role, if any, bias played in conflicts with students or colleagues, participants spoke generally. Any examples that were given were from their distant or somewhat distant past. Generally, the examples given by participants were justified as being caused by immaturity or inexperience. However, relevant data were collected that supported the following theme. The majority of participants admitted that either with students or colleagues, at some point in their career, bias has either caused or escalated a conflict. The idea that bias contributed to conflict by either causing it or escalating it seemed to resonate with some participants. For example, Carrie reminisced in her response to an interview question about a time when bias escalated her conflict with a student. She stated, "I was young, just starting and a student was becoming aggressive when I was working with them and pushing them. He was Black and even though he was in elementary school, he was pretty big. In hindsight, I think bias and fear drove my responses more than I'd like to admit." She elaborated, "I wrote him up and instead of me helping him I actually got him in trouble. I don't think I would have reacted that way if he was smaller and well, White."

Another participant opined that she'd seen colleagues treat Black and Hispanic students differently than White students when they are misbehaving. Hannah said, "It's like sometimes, teachers assume that the parent won't be helpful if a Black or Hispanic kid is misbehaving. They jump right to administration, but don't try to call home. I've heard them say things that dismiss the parent's ability to help or partner without even trying." This same concept of differential treatment for children of color was echoed by Jane when she stated, "Some of my teachers are either scared of minority parents or discount them before they even try. Yeah, they might push back, I've seen that. They might not help, but we still owe it to them to keep them informed and not be fearful or dismissive."

Bruce provided additional context regarding the escalation of conflict based on bias. He stated, "When I see some educators interact with Black males, it's like they are expecting them to be violent. You can see some teachers can't look them in the eyes in the hall." He offered the following explanation for this behavior in his response, "Society tells us that Black men are dangerous. We see it. It builds bias. Even when people don't believe it rationally, I think it's that subconscious that kicks in."

As illustrated by the above-mentioned specific responses by participants, the theme that bias plays a role in creating or escalating conflict in the workplace was an important one. Participants freely admitted that conflict existed in their schools. Most participants also gave examples of how bias manifested and either caused or escalated a conflict. Most of those examples given by participants ended with a less powerful student or colleague being oppressed by the more powerful actor whom they perceived to be motivated was plagued by bias.

Unconscious Bias Towards Colleagues

Research Sub-Question A's previously discussed theme of the unconscious driving biased behaviors towards students was supported by Research Sub-Question B through participant responses regarding the root cause of bias directed specifically towards colleagues at work. Again, the vast majority, with Jane again being the notable outlier, reported that they thought unconscious, or implicit, bias was to blame. Mary captured this sentiment when she said, "I try not to see color and treat everyone the same. I think that's the definition of being unbiased and most of my colleagues feel the same way. But bias does exist, so it's got to be something we don't notice, so I'd say unconscious."

Paige, Hannah, Carrie, and Bruce each responded with little editorialization and simply answered the question by stating directly or indirectly something similar to, "I think it's mostly unconscious." However, James seemed to be the most conflicted in his answer. He stated, "I guess it's unconscious, but I don't know. When you're dealing with other adults, I think there is more of a chance your bias is conscious, I'm just not sure… That's a tough one."

Jane, who echoed a similar sentiment as when she was asked about biased interactions with students remarked, "You've heard me say it before. I believe it's a subtle form of racism. Maybe worse than someone who's overtly racist." She continued after a brief pause and stated, "I know how to handle them. But to hide behind unconscious when we've had all this training, no. I don't buy it." With that exception aside, generally, the participants also seemed willing to diminish fault for biased interactions among colleagues by assigning it to the unconscious mind's purview.

Colleagues Matter, but Students Matter More

Though each of the participants reported that they thought bias affecting collegial relationships was at least somewhat important, the majority used stronger language to express the importance of bias affecting conflict with students. Participants placed more emphasis upon, and spent more time explaining how, they felt about bias impacting students. Additionally, when responding to the Importance Performance Analysis (IPA) follow-up question seeking to determine participant assigned importance to the subject, most participants responded that bias manifestations that affect students were more important than those only affecting relationships between colleagues. Hannah stated, “It’s important to understand bias with colleagues but I mean the stakes are so much higher with your kids. It can really change their direction.” Additionally, Tatiana offered a one-word response when asked to describe the importance of bias and conflicts with colleagues. She simply stated, “Important.” In contrast, when asked a similar interview question about biased conflicts with students she offered the following response, “Bias in conflict with students and kids can literally change their life. If they aren’t looked at as individuals but instead as Black or whatever and expected to either be aggressive, or bad, or whatever, that can ruin a kid. I’ve seen it…”

Tatiana discussed what she perceived as biased interactions that she had experienced with colleagues. She said, “I think I’ve had some teachers I’ve worked with, you know, where my Blackness kept them from getting close.” She continued and further illustrated another nonchalant attitude towards biased colleague interactions when she said, “I mean things like not getting invited to events… But, you know, that’s how it goes. They’re adults, I’m an adult, we don’t all have to be friends. It doesn’t really matter to me.” In contrast, when Tatiana discussed biased interactions involving students, as quoted above, she indicated that they mattered.

Biased interactions among colleagues were reported with some frequency by participants. However, the interactions did not resonate as strongly with participants as did biased interactions with students. Most participants who acknowledged biased interactions with colleagues seemed to down-play their significance. Additionally, the examples given were deemed less detrimental to the person experiencing bias than participants expressed when discussing students.

In summary, through these interviews and importance rating questions, I sought to determine participants' awareness of bias and its manifestations. I also looked for the significance that they attributed to this understanding in the context of their workplace conduct specifically related to conflicts with students and colleagues. The responses yielded the following four prominent themes that helped me to answer Research Sub-Question B. First, subjects recognized that conflict in the workplace is not only inevitable but also varied in nature. Second, several subjects reported instances of bias either causing conflict in their workplace and/or escalating it. Third, though subjects reported that understanding biases roles in conflict was important whether pertaining to collegial interactions or student interactions more importance was generally given to those conflicts where bias played a role in conflicts with students. Finally, the unconscious was blamed by nearly all participants for biased interactions with colleagues. These findings collectively contributed to addressing Research Sub-Question B.

Research Sub-Question C

Research Sub-Question C sought to determine the perceptions of participating educators regarding the implications of bias for teaching and learning activities like instructional intervention, talent identification, and special education determinations. To gain understanding of participants' perspectives about these issues, I asked the participants six open-ended interview questions. This was after front-loading the questions by way of reading to participants the research sub-question that the interview questions were intended to answer. A full list of interview questions can be found in Appendix B. When I asked interview questions, they sought to inform the research sub-question related to their perceptions of bias's role, if any, in teaching and learning activities such as intervention, gifted identification, and special education referrals. Additionally, Interview Questions 5 and 6 sought information regarding participants' perceptions pertaining to punctuating events that happened internally within the school community and those that happened in the external community. The inclusion of these interview questions was informed by the Punctuated Equilibrium Theory (PET), my theoretical framework. They enabled me to gauge participant perceptions related to punctuating events impact on bias training.

As interview responses to Research Sub-Question C were coded and examined for themes, four emerged that helped me to form an answer to this query. First, each educator was able to describe either a hypothetical or real example from their experiences that, from their perspective, involved the negative impact of bias on teaching and learning activities. Second, most participants had difficulty giving examples or discussing how, if at all, they had seen bias manifest itself in educator effectiveness. Third, many participants reported that some special education decisions they were either directly or indirectly involved in seemed to be negatively influenced by bias. Fourth, the majority of participants responded that both external and internal punctuating events affected conversations within their school regarding bias and its relationship with teaching and learning.

Negative Impact of Bias on Teaching and Learning

Upon reviewing interview transcripts pertaining to Research Sub-Question C, I found that the words negative, negatively, harmful, and bad were mentioned in the responses of participants over 25 times. Each time the word was used to describe how bias had impacted students. Participants were in consensus that bias negatively impacts a wide array of teaching and learning activities. Most participants also responded to the interview question seeking examples of bias impacting teaching and learning activities with one or more anecdotes that demonstrated such bias. Jane said, “I’ve got so many stories after all these years. I see bias in teachers and others in the building cause students to be held back or not get chances. I think about all the kids that remind me of my sons and how they can easily get treated differently.” Others shared similar sentiments. Paige said, “If a student is not challenged because of how they look or preconceived notions, they might not get the opportunity to excel… They get labeled a lot.”

Some participants spoke about specific examples of bias impacting teaching and learning. Hannah, who was an elementary teacher, said, “I remember this one Hispanic student particularly. His teacher was interested in having him referred through the special education process. Luckily, the intervention team was able to figure out it was a language issue, and he was better served through ESL rather than SPED.” Mary contributed that by saying, “I guess I’m trying to be positive and think if biases have ever caused us to do something positive for students. I really can’t think of a time. I just keep thinking about kids in the past who I feel like we’ve failed due to biased first impressions.” Through the previous responses, the participants were generally able to see, or imagine, bias negatively affecting student outcomes.

Educator Effectiveness Blindspot

Interestingly, the same participants who were easily prompted through the interview questions to offer examples of how bias negatively affected student outcomes seemed mostly mute or unsure of how bias might manifest itself (or be manifested) in educator effectiveness. When asked directly about examples they had seen or heard about in which bias in teaching and learning activities was manifested in educator effectiveness responses were scant. Participants seemed to have difficulty relating biased interactions from teachers to educator effectiveness measures. Only one participant, the administrator, offered a concrete example from their own work. Jane stated, “Thinking about the teacher evaluation rubric, it’s hard to score well on that if you’re a biased teacher. It says right in there [something] about valuing everyone’s unique contributions somewhere.”

Hannah indicated that she could imagine how a biased teacher couldn't be as effective. She said, "Yeah, if the teacher isn't seeing everyone's potential or if they have biased or bigoted views, I can imagine they'd have a hard time getting much out of their kids on the EOGs and stuff." However, most participants either seemed confused by the question or simply stated that they didn't have an example. For instance, James stated, "That's a good question. I guess I haven't thought about that before. I don't really know." Similarly, Tatiana stated, "I don't think I can come up with an example." Bruce, Mary, Carrie and Paige all offered similarly inconclusive answers. Thus, it appears that even among a group of participants with a working knowledge of bias and its negative manifestations, that limited thought is given to how bias affects a teacher's effectiveness either through formal evaluations or student performance indicators like end of grade tests.

Bias in Special Education Determinations

Research exists and has been referenced in other parts of this dissertation that documents that minority students are over-identified for and disproportionately represented in special education programs. In response to interview questions seeking examples of bias impacting student teaching and learning activities like instructional intervention, talent identification and special education determinations the participants seemed to respond in such a way as to support the conclusions of the prevailing research published by academics. Participant responses indicated that they had all seen bias of some type affect the identification of special education students. Of the eight participants, each one of them expressed in some way that they believed Black and Hispanic students were overrepresented in special education referrals and/or placements. There were justifications for their perceptions, some of which were anecdotal and others that were more mathematical or scientific.

Jane stated, “When I serve as the LEA [Local Educational Authority] in IEP meetings I always have to be vigilant that race or other bias isn’t contributing to any determination we might reach.” She continued further to state, “I really think it’s bad for our Black boys and some girls. They might act out in elementary school and the teacher, who’s usually a young white female, doesn’t know how to handle them. Then they get referred and labeled as behaviorally disturbed but what they need was some discipline.”

Carrie, who holds a specialist role that is involved in the special education referral process, also expressed her perception of bias causing overidentification of certain sub-groups of students. She stated, “I have to evaluate students in the referral process and sometimes, you know, I just don’t know why they are there. I’m afraid that the IEP process is a first choice not a last choice for some if the kid doesn’t quite fit in.” She continued, “I don’t have data, but I do know that I work at a predominantly white school but see mostly black and brown faces in my office for initial referrals.” Though her data were informal in nature, Carrie’s perspective as a gatekeeper of special education placement was meaningful in assisting me to understand how bias might be manifested in special education population disproportionality.

Bruce, also lacking formal data to support his perceptions, offered a more personalized example of what he felt like was bias influencing special education. He stated, “As a beginning teacher, I had a mentor. He was a Black guy like me. He told me about how his teachers in school tried to put him in special education. He told me he was quiet and disengaged because he had a stuttering problem, but he understood his work.” He continued offering his former mentor as an example of bias manifestation when he continued, “See, he felt like they made assumptions about him as a Black male and they jumped towards SPED instead of getting to know him.”

Bruce ended his anecdote by saying, “It sticks with me. I am vigilant about it and we all got to be if we want to stop it.”

Finally, Tatiana’s response related to bias in special education identification challenged the mathematical and statistical probability of the disproportionality that she has observed. She said, “We know that races and genders are not predisposed to having cognitive impairments. What no one has ever been able to explain to me then is why I see more Black kids as a proportion classified as learning disabled or in SPED than whites. Especially Black males.” She continued, “The math doesn’t add up. Hypothetically, we’ve got 200 Black kids in a school and 50 of them are SPED. There are 500 White kids and 25 of them are SPED. That right there shows something is off. I can’t come to any other conclusion than racial and maybe gender bias.” She expanded this response, focusing on her current school, by stating, “It’s crazy to me that in a school that’s mostly east Asian like mine that we don’t have basically any Indian or Asian students in our SPED classes, except maybe profoundly disabled. I actually get frustrated thinking about it.” As the previous quotes support, participants overwhelmingly perceived that bias either caused or contributed to the disproportionate representation of minorities in special education programs.

Punctuating Events and Conversations About Bias

During interview data analysis related to Research Sub-Question C, it became clear that participants were generally conclusive that punctuating events impacted conversations about bias in schools. In an attempt to gain participant perceptions related to the applicability of the Punctuated Equilibrium Theory (PET) for change, I asked two interview questions. Interview Question C5 sought to determine what, if any, impact external punctuating events in the community, country, or even world affected conversations in their schools about bias. Examples of such events were cited during the interview and included:

- the September 11, 2001, terrorist attacks on America,
- wide-spread anti-police brutality demonstrations,
- rioting occurring in the summer of 2021 in response to the murder of George Floyd in Minneapolis, and
- even the Japanese attack on Pearl Harbor in 1941.

Interview Question C6 sought to ascertain the same perceptions but focused on internal punctuating events within a school community. Hypothetical examples of such events were given that included a school community member using racially charged language, wearing of Confederate flags by students or the finding of a noose or other racial epithet on campus.

Most participants reported that punctuating events both internal and external to their schools, such as the ones previously mentioned, had an impact on conversations regarding bias both among staff and students. Additionally, the majority of participants indicated that they felt more focus from school and system leaders related to examination of bias, particularly racial and cultural bias, in response to external punctuating events. Hannah illustrated this theme when she said, “I remember well after George Floyd’s murder that people were talking. As a school and district-wide we had serious conversations about how our students were feeling and what we could do to mitigate those negative feelings.” She also gave an example of an internal punctuating event that drove targeted instruction and conversation regarding biases to her elementary students. She said, “There was a racial name being called last year by one of our kids. That caused our team to take purposeful time to meet with our students and try to help them understand why that was hurtful, inappropriate, and you know, about how those biases, or racism, is bad for us."

Carrie reminisced about the impact that the September 11, 2001, terror attacks had on conversations she was having with students during that time. She stated, "I was teaching during 9/11. We saw a lot of anti-Muslim sentiment and we had to address that. Yeah, that's an example of an outside big event causing us to focus on bias in schools." Her comments served as an example of how external punctuating events can drive conversations regarding bias in schools.

In summary, through these interviews I attempted to determine participants' perceptions regarding implications of bias for teaching and learning activities like intervention, gifted and talented identification, and special education determinations. Additionally, pointed questions were asked to delineate between internal punctuating events and external punctuating events. The responses yielded the following four prominent themes that helped to answer Research Sub-Question C. First, all participants easily described hypothetical or real examples that they believed involved bias negatively impacting teaching and learning of students. Second, most participants struggled to give examples of bias manifesting in educator effectiveness, representing a blind-spot in the understanding of bias negatively impacting teacher value-add. Third, most participants reported having seen examples of bias manifesting itself negatively in special education decisions. Fourth and finally, the majority of participants responded that they had seen both internal and external punctuating events affect, or even drive, conversations within their schools regarding bias. These findings collectively contributed to addressing Research Sub-Question C.

Research Sub-Question D

Research Sub-Question D aimed to capture the perspectives of participating educators regarding experiential types of professional development and the propensity of such training to bring about changes in practice. Participants were queried to assess their familiarity with virtual reality (VR) both as a concept and as a method for delivering professional development. They were given the opportunity to recount their experiences during the VR session and reflect on any noteworthy learning moments. Additionally, participants were asked to share their thoughts on how the VR session might influence their own or their colleagues' future professional practices. Qualitative Importance Performance Analysis (IPA) follow-up questions were also employed to gauge participants' perceptions of the potential of VR experiences for improving their own or colleagues' professional practices. A complete list of interview and IPA questions can be found in Appendix B.

Following the interviews and during the thematic coding analysis, several major themes emerged that informed the response to Research Sub-Question D. First, participants reported minimal exposure to VR technology or any kind of experiential professional development. Second, participants all described their experience in this VR professional development as engaging. Third, participants generally reported feeling like they learned effective methods of bystander intervention and experienced empathy for those they saw experience biased interactions in the VR simulation. Fourth and finally, participants expressed that their participation in the VR professional development as a part of this study might impact their professional practices positively. However, they believed that other educators would benefit more from the training than they did.

Limited Past Exposure to VR

The first theme that emerged in response to Research Sub-Question D was that participants had extremely limited previous experiences with VR technology of any kind. No participants had used VR for professional development purposes before their participation in this study. One participant indicated that he had been exposed by his administrators to experiential professional development by way of role-playing. Carrie was the only participant who had used VR in any form previously. She explained her previous use of the technology when she said, "The only time I've used VR was at an art exhibit. Not in school. It was pretty neat and it's why I signed up for this study." James interpreted the concept of experiential professional development to include instances of role playing he had experienced in staff meetings. He said, "I've seen my principal and administrators present role play scenarios, you know, like with how to handle a student that's acting out." Aside from these two examples no other participants reported being exposed to any sort of experiential professional development or use of virtual reality prior to their participation in this study.

VR Increasing Engagement in Training

Participants' responses for Research Sub-Question D indicated that the virtual reality (VR) delivery of the training caused them to feel engaged. Nearly all participants reported feeling more engaged in the VR training than in previous static professional development sessions. I did not specifically ask participants to compare the VR training to traditional training. However, when they were asked to describe their experience, the majority of participants made the comparison organically. Comments regarding the realistic and immersive nature of the VR experience were common among the participants. Those responses supported the concept of increased engagement driven by the VR technology.

Mary stated, “It [VR] really made me pay attention. Much more than just watching a video or reading something… Having to answer questions held me accountable too.” Similar sentiments were expressed by other participants. Tatiana said, “It really was neat to feel like I was there. You couldn’t not pay attention because it kind of sucked you in. I wanted to see what happened next.” The comparison between static training and the VR training was addressed in Bruce’s interview response. He stated, “It kind of reminded me of some of the same videos the county requires us to watch every year, but it was actually dynamic and engaging. It held my attention much better. Usually, I just kind of daydream through some of those trainings we have to watch.” One participant offered some criticism of the VR training that served as a possible barrier to engagement. Carrie remarked, “Overall it was a good experience… I had issues with the physical control of the device. It was kind of hard for me to use and swipe and select the choices on the screen.”

VR Promoting Empathy and Offering Mitigation Techniques

Based on participant responses to interview questions seeking to inform Research Sub-Question D, the VR training experience appeared to promote empathy within the participating educators. Additionally, several participants remarked that the VR training gave them better perspective regarding appropriate ways to mitigate bias in the workplace when they witness it. Both previous concepts were punctuated by some participants reporting that they had a better understanding of what the victim of bias was going through because of the VR experience. One outlier offered critical feedback regarding the training and its ability to inspire empathy and offer effective mitigation techniques.

Paige offered perspectives that prompted the identification of this theme when she said, “I actually felt bad for the actor. I mean I know it’s a script, but it was hard to watch what some of them went through. I think I have a better understanding of how, you know, to show empathy." She continued by saying, "I think some of the responses the human resources person gave were not what I would have come up with myself, so I feel more able to step in." She concluded by stating that, "I could see how this could be transformative for someone." Bruce offered similar input on the subject when he said, "I saw things in a way I never really thought about in that training. It kind of changed my perspective about what people actually feel. I know how I feel but that's been my limit before." The two previous quotes were examples of numerous other participant statements of praise for the VR session's increase in their empathy and for offering positive bystander intervention technique examples.

Not all responses were as enthusiastic. Hannah took issue with what she called the "simplistic" nature of the issues addressed. She stated, "I guess these things were so obvious and simplistic. I don't think I really learned anything new really." It is, however, worth noting that Hannah distinguished herself through her own statements as a more advanced student of bias. She indicated that her recent teacher preparedness training at her university focused on implicit bias. Her remarks and unique background lead me to believe that the VR training used in this study may be more transformative to those without an advanced understanding of bias.

The "Other" Educators, Again

Participant responses to interview questions seeking to inform Research Sub-Question D often referred to potential benefits of anti-bias training for hypothetical "others" rather than themselves. A theme similar to this was noted in Research Sub-Questions A and C. When answering interview questions to inform Research Sub-Questions A and C, participants seemed to have difficulty taking responsibility for their own part in biased behaviors or outcomes. That same general theme revealed itself again in answers participants gave to interview questions seeking to inform Research Sub-Question D. Though all participants reported some level of impact for them personally, ranging from Hannah's description of the training as "simplistic" to Paige's belief in the possible "transformative" nature of the VR training, most answers referred to "others" being impacted.

Numerous quotes supported the participants' tendency to deflect or defer any need for anti-bias training toward their colleagues. During coding, words like *they, them,* and *others* appeared frequently when participants discussed bias and any need for improvements in mitigation, outcomes, or interventions. Tatiana, who was generally more self-reflective than the other participants, remarked, "I know I took away some things from this training, but I can see some others really benefiting from this. Especially new teachers or those not used to diversity." Carrie took her deflection further when she stated, "I guess I don't really think I have any take-aways from this. I'm not biased in my work, so it doesn't really apply to me. If someone was, though, it might wake them up." Jane said something similar in response to an interview question. She stated, "I've seen this. I know all about bias. I check mine. Does everyone else? I don't think you can convince me of that." The continued reference to "others" when discussing bias was a prevalent theme in participant responses across various research sub-questions and interview questions. The prevalence of this theme suggests that the personal and stigmatized nature of possessing bias caused participants to limit their own opportunity for self-reflection and judgement by suggesting that "others" could benefit from the increased empathy and exposure that the effective bystander intervention the VR session offered.

Ancillary Findings

Some participant responses were noteworthy but did not directly contribute to answering the research question or any research sub-questions. Those responses of note are reviewed in this section and are classified as ancillary findings.

The first such finding was that there was a high level of interest in the study. Prior to commencement of the study and final selection of participants, many applicants expressed interest in participation because of the virtual reality (VR) component. Responses to the recruitment email came back quickly and multiple educators seeking to participate wrote me directly indicating their interest in the technology. Hannah, who was selected as a final participant, exemplified this excitement when she wrote in an email, "I am really excited about a chance to learn more about VR. It's something I have been thinking about trying in my classroom so I think I can really benefit from this study…."

Another ancillary finding was that participants were generally able to quickly learn how to use the VR headset. With the exception of one participant, Carrie, no one indicated difficulty maneuvering or interacting within the scenario. Though I gave participants a quick introduction to the controls of the Oculus headset, in general very little instruction was necessary for participants to become proficient in its operation. This is particularly noteworthy considering all participants were novices at using VR technologies.

Though I stopped short of identifying the following finding as a theme, its illumination of the effects of the VR training experience, while offered by only a couple participants, makes it worthy of comment. Two participants indicated that they felt that they were impacted significantly by the experiences witnessed in the VR training. Carrie said, "This experience really made me look outside myself. I think it was kind of a big deal to feel like [the victims of biased interactions] did." Mary shared a similar observation about the VR experience when she said, "This could change someone's perspective and make them better. I think, through exposure, I'd become more equitable in how I act in school." Both of those comments hint at the idea that the VR exposure to biased interactions could lead to individuals operating in a more equitable and just way to colleagues and students.

Finally, participants all seemed to be genuinely interested in giving their opinions and indicated they had had a positive experience participating in the study. I designed the study specifically to ensure that limited time was required of participants. I also sought to offer options for meeting places that would be convenient for participants. Additionally, I incentivized participant participation with a gift-card valued at 50 dollars. All of these specifically designed components of the study resulted in each participant seeming to reflect on their time in the study in a positive manner. As an example, Tatiana concluded our interview by stating, "Thank you for this, really. It was interesting, and you made it painless. Also, it was an important topic."

Chapter Summary

In this chapter I presented the perspectives of professional educators working in public schools regarding issues related to racial and gender bias, as well as their views on effective bystander intervention techniques. The preceding sections have presented the results of qualitative research aimed at addressing the primary research question and its associated sub-questions. Those sections outlined how participants, from various demographic backgrounds, responded to their respective research inquiries.

CHAPTER 5: DISCUSSION

Chapter Introduction

The purpose of this chapter is to discuss the findings of this study and provide useful recommendations for future application of the results. The opening section revisits and summarizes the study's purpose. Following that, a summary of findings is provided, organized according to the research sub-questions. This is followed by a discussion of the findings in which research results relevant to each research sub-question are elaborated. The theoretical frameworks that underpin the study are then carefully reviewed and assessed for their applicability. Delimitations and limitations of the research are acknowledged. Subsequent sections offer recommendations for policy, practice, and future research stemming from the study's outcomes. Finally, the chapter culminates with a summary, effectively concluding this dissertation.

Study Purpose

The study aimed to investigate the attitudes of public school instructional and administrative personnel regarding racial and gender bias and bystander intervention techniques. It was conducted in a diverse suburban school system in the southeastern United States; eight educators engaged as participants. The research followed Braun and Clarke's six-step thematic analysis procedure to analyze interview transcripts. An adapted Importance-Performance Analysis (IPA) was used to assess the importance participants placed on bias and bystander intervention issues. Participants were asked to reflect on how the VR training impacted their professional perspectives and practices and if they planned to make changes based on their experiences.

Summary of Findings

The exploratory nature of this research enabled a thorough exploration of both the overarching research question concerning educators' viewpoints on implicit bias training through virtual reality in their professional roles and the subsidiary research questions that provided context. Within the framework of this research, qualitative investigation provided participants with a platform to convey their significant experiences using their own words. The study allowed participants to articulate their viewpoints, beliefs, and insights during interview sessions. Current professional educators working in schools actively participated in the study, offering their valuable insights, beliefs, and perspectives in response to open-ended interview questions, each of which was tied to a specific sub-question within the research.

The central research question posed was: What are the perspectives of participating educators on the effectiveness of implicit bias training using virtual reality in their professional roles? To delve deeper into this research, I developed four sub-questions, each tailored to explore the central question within a more specific context:

a. What are the perceptions of participating educators regarding the implications of bias when dealing with conflicts, such as managing student behavior or engaging in collegial interactions?
b. What are the perceptions of participating educators regarding the implications of bias in teaching and learning activities, such as instructional interventions, talent identification, and determinations in special education?
c. How do educators describe the value of experiential professional development in effecting changes in their practice?
d. How do educators describe the value of experiential types of PD in changing practice?

Following each interview, I transcribed the session utilizing a transcription tool that is incorporated in the Zoom suite hosted by North Carolina State University. Subsequently, I reviewed and rectified transcription errors emerging from the automated transcript generation. This was followed by crafting an initial interpretation of the data gleaned from each participant. In the subsequent stages, a thematic analysis, in line with the methodological framework of Braun and Clarke (2012), was employed to analyze the data. This analytical process encompassed the steps of acquainting myself with the data, coding, preliminary theme formulation, refining themes, finalizing themes, and generating the ultimate report. Many themes emerged. In the following paragraphs they are organized into categories based on the specific research sub-question that they helped to inform.

Research Sub-Question A explored the perceptions of participating educators regarding the recognition of bias and its manifestation in their own workplace behaviors. The responses to interview questions yielded several interesting themes and findings. First, all participants had at least a basic understanding of bias. Some referenced specific training and one participant, who was the youngest, referenced anti-bias training that she received while in her undergraduate teacher preparedness program. Second, participants showed a propensity to give examples of bias that directly related to themselves. Demographic sub-groups of which participants were themselves a member seemed to be the focus of their responses to questions about bias in general. This phenomenon was offered by enough participants that it prompted the creation of a theme of participants' self-oriented understanding of bias. In essence, when discussing bias, participants frequently shared anecdotes or experiences related to their own race, gender, age, or other personal characteristics. This inclination to draw from their own life experiences to illustrate instances of bias suggested that their understanding of bias was influenced by their own identities and experiences. This phenomenon added depth to my study's findings, highlighting the importance of considering individuals' personal perspectives and backgrounds when examining the subject of bias. Third, with the exception of one outlier, all participants moderated their accounts of the existence of bias that they observed in their workplace by indicating that it was driven by the unconscious or was implicit bias. This uniform tendency among participants to attribute observed bias to unconscious or implicit bias implies a collective recognition that bias in the workplace can manifest in subtle, unintentional ways. Fourth, participants had a tendency to deflect blame for bias, which they freely admit exists, towards other educators rather than examining their own behaviors or thoughts. It suggests that when confronted with the presence of bias, individuals may resort to a form of cognitive dissonance, seeking to distance themselves from implications of personal bias. This behavior may be a defense mechanism, allowing participants to maintain a positive self-image by positioning themselves as unbiased while attributing bias to others. This finding underscores the complex and often defensive nature of discussions surrounding bias, highlighting the need for open and non-judgmental dialogues that encourage self-reflection and personal growth in addressing bias-related issues Finally, all participants, to varying degrees, reported that bias and its harmful manifestations did matter to them.

Research Sub-Question B’s interview questions produced multiple themes that contributed to understanding perceptions of participating educators regarding the implications of bias in teaching and learning activities, such as instructional interventions, talent identification, and determinations in special education. First, all participants agreed that conflict regularly occurs in their workplace. This shared acknowledgment underscores the pervasive nature of conflict within their workplace setting (schools). The unanimity of this perspective indicates that conflict is not an isolated or sporadic incident but rather an inherent aspect of their daily work. Additionally, it underscores the need for proactive efforts to promote harmony and effective collaboration in an environment where conflicts are a routine part of the professional landscape. Second, participants generally agreed that bias either caused or escalated instances of conflict in their workplace. This shared perspective underscores the complex interplay between bias and conflict dynamics. It also emphasizes the importance of addressing bias-related issues as part of conflict resolution strategies for educators. Third, participants, with the exception of one outlier, believed that the unconscious was to blame for biased interactions among colleagues. This nearly unanimous consensus highlights the educators' collective understanding of the intricate and often subtle ways that unconscious biases can influence professional relationships and contribute to workplace conflicts. Finally, participants in the study shared a perception that biased interactions between students and educators held a higher level of significance compared to those that occur between colleagues. This belief reflects the educators' awareness of the profound impact that such interactions can have on students' academic experiences and overall well-being, underlining the importance of addressing bias. All of these themes contributed to answering Research Sub-Question B.

Research Sub-Question C sought to understand how educators describe the value of experiential professional development in effecting changes in their practice. Analysis of participant responses to the related interview questions yielded several themes. First, participants overwhelmingly believed that bias negatively impacted teaching and learning activities in schools. There was unanimous agreement from participants that bias can manifest as differential treatment, limiting access to educational opportunities, or perpetuating stereotypes, all of which can hinder student engagement, academic performance, and overall well-being in schools.

Second, the participants had difficulty explaining how bias might impact educator effectiveness as gauged in formal evaluations or standardized testing results. This seemed to represent a blind spot in participant understanding of the link between educator bias and educator effectiveness. The blind spot is consistent with a previously mentioned and recurring theme that suggests that when it comes to bias, educators have a difficult time looking within themselves for acts of manifestation that might negatively impact their own effectiveness. Third, participants believed that bias played a role in special education determinations for students that at least contributed to the overrepresentation of minorities in special programs. This perception highlights the educators' awareness of the potential systemic bias within special education determinations and its connection to the overrepresentation of minority students in these programs. Finally, the majority of participants concluded that major societal punctuating events and in-school major events have or could have the potential to prompt or impact discussions and conversations about bias in schools. In other words, they recognized that external and internal factors, both within and outside the school environment, could serve as catalysts for raising awareness and prompting dialogues regarding issues of bias and discrimination in educational settings.

The final research sub-question was Research Sub-Question D. This sub-question focused on gathering participant perceptions related to the VR experience itself. The following themes emerged. First, all participants had little to no previous exposure to the VR experiences. This finding indicates that the use of VR technology in educational settings was relatively unfamiliar to the participants, signifying a potential learning curve when introducing VR-based training programs. This lack of prior exposure suggests that the participants may have approached the immersive VR training with varying levels of anticipation, curiosity, and possibly some apprehension, given the novelty and unfamiliarity of the technology. Second, most participants reported feeling more engaged in the VR training than in more static trainings that they had experienced in the past. Participants reported that the immersive nature of VR, which often involved interactive scenarios, created a unique learning experience. They found that this dynamic and visually sensory-rich approach to training was more engaging than traditional static methods, such as lectures or slide presentations. Third, many participants reported that the VR training caused them to feel empathy for those whom they saw experience bias in the session. This observation reflects the immersive power of VR in allowing participants to step into the shoes of others and witness firsthand the challenges and emotional aspects of bias-related situations. By virtually experiencing these scenarios, participants reported that they could better understand the perspectives and feelings of those facing bias, fostering a greater sense of empathy and compassion. Additionally, several participants remarked that some of the bias bystander mitigation techniques they were exposed to could be useful. They recognized that the skills and strategies taught in the VR program could equip them to effectively address bias and when encountered in their lives. Fourth and finally, participants again referenced “other” educators needing this type of anti-bias training more than themselves. This perspective raises questions about the participants' own perceptions of their readiness and competence for addressing bias-related issues.

Through the interview process that followed the VR session and data analysis, the themes in this section were identified. Those themes and their analysis collectively served to answer the overarching research question and subsequent research sub-questions. The participating educator perceptions regarding effectiveness of implicit bias training using virtual reality in their professional roles were varied and wide-ranging. Regardless, each participant contributed meaningfully and offered relevant perceptions that were explored in depth.

Discussion of Findings

The study's research questions were informed by participant's responses to interview questions by utilizing the process of thematic analysis. The following discussion of research findings is broken down by the four research sub-questions. In each instance, the findings are reviewed to ascertain their alignment with existing research. Similarities and differences are discussed, and novel findings are addressed. Finally, I offer broader perspectives on the findings that arise from my analysis of the pertinent body of knowledge and my application of the theoretical framework.

Research Sub-Question A explored the perceptions of participating educators regarding the recognition of bias and its manifestation in their own workplace behaviors. The findings were fivefold. First, each participant in the study had, at a minimum, a basic working knowledge of bias and its potential harmful manifestations in education. This finding is supported by research that found educators have similar levels of bias as other professions (Blackson et al., 2022). The study participants were recruited from a district that has been acknowledged for addressing bias awareness and mediation. Additionally, the participants volunteered for the study after being introduced to the study purpose and procedures. Therefore, it is safe to assume that they had some prior understanding of and/or interest in the topic. This finding is consistent with research cited in the literature review that explains the prevalence of bias in various societies and institutions. For instance, research documents the implicit racial, cultural, and gender biases of Americans in multiple institutions including the criminal justice system (Arnold et al., 2017), insurance and hospital systems (Wang et al., 2015) and of course, in education (Baker, 2005). In light of this existing research and the size of the district from which participants were recruited, the relatively small number of responses to the study invitation (approximately 25) raises additional concerns regarding educators' willingness to address directly the delicate subject of bias even in a research environment. Previous research has found that educators can be hesitant to discuss race and bias for fear of misspeaking or potentially being judged (Copur-Gencturk et al., 2020). Of course, the limited timeframe for response, scheduling conflicts, and the reliance on a third party (school-based instructional facilitators) to forward the email study invitation could also have negatively impacted the number of prospective participants.

The second finding for Research Sub-Question A was that, when asked to offer hypothetical instances of bias occurring, participants tended to give examples of bias that they themselves were likely to experience. This contributed to the theme of participants having a primarily self-oriented concept of bias. Though this tendency may be explained by what Thomas Hobbes (1681) describes as the "nasty, brutish, and short" nature of life where humans are essentially ruled by self-interest, little peer-reviewed research exists on this seemingly novel finding. I did not find research supporting this tendency of participants to offer self-oriented examples of bias in the literature review for this study; I therefore conclude that this could be a novel finding.

Thirdly, Research Sub-Question A's exploration in this study yielded data that supported the concept of workplace bias being caused by the unconscious. This subtle form of unconscious bias is often referred to as implicit bias. Participants' statements relative to the root causes of bias among colleagues and educators as a whole generally suggested that the type of person who works in education is unlikely to want to, or consciously, participate in biased actions or thoughts. The one outlier, who was adamant that biased educator thoughts and actions were driven by purposeful thought, was the senior study participant and the only study participant who was an administrator. Additionally, she was Black and indicated she felt that she and her children had experienced biased behaviors directed towards them by educators. Her own strong negative emotions towards those who engage in biased behaviors may have therefore impacted her responses. The tendency of educators to acknowledge implicit bias as a root cause of biased interactions among educators poses a unique challenge. This challenge is consistent with research conducted by De Houwer (2019), who suggests that a behavioralist viewpoint may be more effective in mitigating the harmful effects of implicit bias, since it does not require individuals to adopt a specific theory for their bias. Instead, he focuses on modifying the behavior. Additionally, De Houwer asserts that by reframing implicit bias in a behavioral framework, individuals are more likely to accept it as ameliorable, since behavior is traditionally seen as able to be changed.

The implicit nature of the bias manifestation origin means that simply knowing better may not positively impact practices (De Houwer, 2019). Instead, because the behavior or thoughts driving the behavior, is happening below conscious thought, that area of the brain may need to be activated. The G.I. Joe Fallacy, also known as the "Knowing is Half the Battle" Fallacy, is a cognitive bias named after the catchphrase from the G.I. Joe cartoon series in the 1980s, "Knowing is half the battle." It refers to the mistaken belief that merely knowing about a problem or issue is equivalent to taking effective action to address it (Cho, 2020)). In other words, people may assume that being aware of a problem automatically leads to solving it, when in reality, it often requires concrete actions and strategies. Virtual Reality (VR) simulations have shown, in this study and in past research, to recreate the state of consciousness and physical arousal that is consistent with the sub-conscious in ways static training has not (Stavroulia et al., 2019). VR may be one concrete strategy to aid in the mitigation of workplace bias. By immersing individuals in scenarios that simulate real-life bias-related experiences, VR can activate the sub-conscious processes underlying bias and provide opportunities for reflection, learning, and behavior change (Crone & Kallen, 2022).

Fourthly, in a pattern that was to repeat itself across multiple research questions, Research Sub-Question A's results identified the theme of participants' tendency to deflect responsibility for bias manifestations towards other educators. The participants all freely admitted that bias exists in their field and even their own experiences in education. However, participants showed a strong tendency to avoid examining their own behaviors or thoughts. Rather, participants discussed other educators and absolved themselves from culpability. This theme led me to consider one of two possibilities: either the participants represent a statistical anomaly and are genuinely taking steps to check their own biases, or the vulnerability of the sensitive and judgment-inspiring admission of having gender and racial biases hindered the participants from openly discussing their own attitudes and behaviors with me. Even with specially designed parameters in place for this study that promised to keep responses confidential, and the use of effective research-supported interview techniques, I believe that participants were still uncomfortable acknowledging their own biases. Though no research explored in the literature review for this dissertation specifically addressed the propensity of research subjects to defer blame for bias, thereby avoiding any judgement from the researcher, common statistical principles suggest that study participant responses to sensitive questions may be skewed. For example, patients sometimes provide inaccurate or dishonest information about their alcohol consumption to healthcare providers for various reasons, including fear of judgment, stigma, or concerns about the consequences of admitting to excessive drinking. This can impact the quality of care and diagnosis provided (Hoonpongsimanont et al., 2021). I believe a similar phenomenon occurred in the study participants' responses related to revealing or discussing their own biases. I believe this finding has the potential to be somewhat novel, as little research appears to be published that addresses it. However, in a general context, the propensity of people to recognize bias more easily in others as opposed to themselves has been explored by another group of researchers. Kahneman et al. (2021) examined this concept in their bestselling book titled “Noise.” Their research led them to report that people often recognize biases more easily in others than they do in themselves and thus coined the term *bias blind spot*. They offer that an impartial decision observer could be helpful in reducing bias in decisions by using a checklist to look for bias creeping into the decision-making process. Additionally, prior research has highlighted the paradoxical nature of Americans nearly universally denying possessing bias but regularly feeling discriminated against (Boutwell, 2017).

Finally, the follow-up questions of Research Sub-Question A's qualitative Importance Performance Analysis (IPA) indicated that all the participants, to varying degrees, reported believing that bias and its manifestations were impactful in the context of their work. An IPA is a research methodology often used in market research and organizational studies to assess the importance of specific attributes or factors and their performance or areas of study. Participants in this study, due to its voluntary nature, could likely be assumed to have represented a population that has some innate interest in the issue of bias. Therefore, this finding was not unexpected. Also, the district in which the study took place had spent considerable time addressing equity and equitable practices as a way of addressing bias.

Another potential explanation for the heightened levels of interest reported by participants regarding bias and its manifestations could be the prevailing societal and local context. Pivotal events prior to the study had thrust this subject into the forefront of public consciousness, making it increasingly pertinent and consequential within the nation, state, and community. These events had not only amplified awareness, but also underscored the urgency of addressing bias-related issues, thus possibly contributing to the participants' elevated engagement with the topic.

Research Sub-Question B examined the perceptions of educators regarding the manifestation of bias in conflicts with unruly students or negative interactions with colleagues. To gather insights, I asked participants a series of open-ended questions; they were also questioned about the importance of understanding bias in such scenarios.

One clear finding was the unanimous recognition among participants that conflicts are an integral part of their professional lives. This finding was supported by a myriad of past research including that of Nagy and Curl-Nagy (2019). These conflicts were broadly categorized into two groups: those between students and those between staff members. While the study primarily focused on conflicts within the educational setting, some participants also mentioned parental or community conflicts, indicating that these interactions also contribute to workplace conflict. Participants spoke of conflicts involving students that often revolved around issues related to behavior and rule violations. Conflicts with colleagues, on the other hand, were typically associated with issues such as time management and interpersonal dynamics. It was apparent from their responses that conflicts were a recurring aspect of their work environment, and participants could readily recall various examples. This study's results regarding the prevalent nature of conflict and stress in the workplace were consistent with past research findings from Roehling and Huang (2017), Marcucci (2020) and Priest et al. (2020).

Furthermore, the recognition of conflicts as an integral part of the professional lives of the participants shed light on the multifaceted nature of these disputes. The distinction between conflicts involving students and those between staff members highlighted the complex dynamics within educational institutions. The conflicts involving students often centered around behavioral issues and rule violations, reflecting the challenges educators face in maintaining discipline and order in the classroom. On the other hand, conflicts with colleagues, characterized by issues like time management and interpersonal dynamics, underscored the importance of effective communication and collaboration among staff members in fostering a harmonious work environment. These findings are supported by past research that suggests that teachers, in order to promote harmonious interactions, must model positive social interactions among themselves and towards students and actively focus on bias remediation techniques (Bayram Özdemir et al., 2022). These findings also underscored the broader societal impact of conflicts, such as the parental and community conflicts that some participants mentioned. Though not the primary focus of the study, these disruptions were recognized as contributing to workplace conflict, further emphasizing the interconnectedness of various aspects of educators' lives.

Another theme that emerged was the acknowledgment by a majority of participants that bias, at some point in their careers, either caused or escalated conflicts. Participants shared examples of how bias influenced their responses and actions in conflict situations. For instance, one participant described a situation where bias led to a conflict escalation with a student due to fear based on the student's race. Additionally, participants mentioned instances in which colleagues treated students of different racial backgrounds differently when they misbehaved. This differential treatment, often based on what the observed believed to be stereotypes, was seen as a manifestation of bias, and contributed to conflicts in the educational setting. This finding is consistent with previous research that highlighted the prevalence of bias in America’s public schools (Compton-Lilly, 2020).

Another important finding was the attribution of bias towards colleagues to unconscious, or implicit, bias. Most participants, with the exception of one, believed that unconscious bias played a significant role in biased behaviors within the workplace. They acknowledged that they, along with their colleagues, may not always be aware of their biases, which could manifest subtly in their interactions with one another. While participants were generally willing to attribute biased behaviors to unconscious biases, there was some ambivalence among them, with one participant expressing uncertainty about the conscious or unconscious nature of bias in adult interactions. These findings were not unexpected as previous research has found that highly trained professionals are unlikely to believe they possess overt biases (Tsai & Michelson, 2020).

Finally, participants tended to place greater emphasis on the importance of understanding bias in conflicts involving students compared to conflicts with colleagues. While they acknowledged that bias in collegial relationships was important, they expressed stronger sentiments about the significance of bias in student interactions. Participants believed that biased interactions with students could significantly impact a student's life, potentially leading to negative outcomes. They cited examples of how biases could affect a student's trajectory and highlighted the gravity of this issue. In contrast, when discussing biased interactions among colleagues, participants often downplayed their significance. Some participants even expressed a nonchalant attitude toward such interactions, viewing them as inevitable and less detrimental than biased interactions with students. The instances in which biased interactions with students were deemed highly problematic by educators, are supported by past research by Singleton (2013), Sue et al. (2007), and Pearce (2019), who found that bias manifested towards students by educators can contribute to a host of detrimental outcomes. However, no supporting research was found that compared the degree to which educators assigned importance to biased colleague interactions relative to that of student interaction. Therefore, the study's finding that participating educators reported being significantly more concerned about biased student interactions than those involving adults may be novel. My own observations as a school leader in multiple conflict-rich environments support this finding as well. Though mostly antidotal, the data I've collected with my own eyes and ears over more than a decade suggests that educators primary focus is on students and conflicts they have with them rather than with colleagues. I've seen many instances of staff members advocating for students they feel are not being treated fairly. Sometimes that advocacy is an attempt to mitigate bias from a colleague towards a student. I've seen much less concern over the years between educators who feel slighted from bias they personally experienced from a colleague.

In conclusion, Research Sub-Question B shed light on educators' perceptions of bias in conflicts with students and colleagues. The findings highlighted the inevitability of conflicts in the workplace, the role of bias in causing or escalating conflicts, the attribution of biased behaviors toward colleagues to unconscious bias, and the differing emphasis placed on bias impacting students versus colleagues. These findings collectively provide valuable insights into the complex dynamics of bias in educational settings and contribute to a better understanding of the challenges educators face when addressing bias-related conflicts.

Research Sub-Question C explored the participants' perceptions regarding the implications of bias for teaching and learning activities, including instructional intervention, talent identification, and special education determinations. To gain insight into participants' perspectives, I posed a series of open-ended interview questions that focused on the role of bias in these educational processes.

One prominent theme that emerged from the responses was the unanimous recognition among participants that bias has a negative impact on a wide range of teaching and learning activities. Participants consistently used terms like "negative," "harmful," and "bad" to describe how bias affected students. They shared a common belief that bias detrimentally influenced various aspects of education. Most participants readily provided examples, either hypothetical or drawn from their experiences, to illustrate how bias negatively affected teaching and learning. They pointed out instances where students were held back or denied opportunities due to bias. This theme underscores the pervasive nature of bias and its detrimental effects on educational outcomes. This theme is supported by past research by authors like Bursell and Olsson (2021), Calvert et al. (2022) and Grace and Nelson (2019), who found that bias played a significant role in negative outcomes for students.

Interestingly, while participants were able to articulate examples of how bias negatively impacted students' learning experiences, they struggled to provide concrete examples or insights into how bias might manifest in educator effectiveness. Most participants were either unsure or had difficulty relating biased interactions by teachers to their overall effectiveness in the classroom. This finding suggests a gap in awareness or understanding among educators regarding the potential impact of bias on teacher evaluations or student performance indicators. Only one participant, an administrator, offered a specific example of how bias might affect a teacher's evaluation. These findings are consistent with those previously referenced by Kahneman et al. (2021), who found that bias was more easily recognized in other people's behaviors rather than in one's self.

Participants overwhelmingly expressed their perception that bias played a role in special education determinations. They believed that Black and Hispanic students were overrepresented in special education referrals and placements, with some participants providing anecdotal evidence to support their claims. Several participants, including those involved in the special education referral process, highlighted concerns about the overidentification of students from certain racial backgrounds. They questioned the validity of such placements and indicated that biases may lead to students being inappropriately classified as needing special education services. These perceptions align with existing research indicating that minority students are disproportionately represented in special education programs, and the participants' responses serve to reinforce these findings. Specifically, Kincaid and Sullivan (2016) address the undeniable and unjustifiable link between minority status and special education determinations that study participants also reported witnessing.

Participants generally agreed that punctuating events, both internal and external to their schools, had a significant impact on conversations about bias. External events, such as the September 11, 2001, terrorist attacks and widespread anti-police brutality demonstrations, were mentioned as catalysts for increased focus on discussions about bias within the school community. Most participants indicated that external events led to heightened awareness and discussions about bias at both the school and district levels. They recognized the importance of addressing bias-related issues in response to these external events. Internal punctuating events, such as incidents involving racial language or symbols within the school community, were also seen as triggers for conversations about bias. Participants shared examples of how these internal events prompted targeted instruction and discussions with students to address bias and its consequences. Though no participant indicated that the conversations they lead with students after these events were scripted or formalized, they did occur, and it appears organically to meet a perceived need of their students. The participants willingness to facilitate these difficult conversations in times of need offers supporting evidence that they did possess the capacity to delve into this important subject matter when called upon by outside pressures. Since the participating educators acknowledged that they have the ability to lead these important conversations about bias after punctuating events I believe that they and their students may be well served not to wait for such events. Instead, anti-bias conversations and other bias mitigating material could be integrated proactively. I did not find relevant research that either supported or contradicted these findings. Therefore, I concluded that the theme of the impact of either internal or external punctuating events on conversations about bias in schools, as reported by the study participants, may represent a novel finding.

In conclusion, Research Sub-Question C provided valuable insights into educators' perceptions about the implications of bias for teaching and learning activities. The findings highlighted the pervasive negative impact of bias on various aspects of education, including instructional intervention, talent identification, and special education determinations. Participants recognized the role of bias in disproportionately placing minority students in special education programs.

Additionally, the study revealed that participating educators were generally more aware of the effects of bias on students' learning experiences than on teacher effectiveness. The presence of blind spots in understanding bias in educator evaluations suggested a need for further education and awareness-building among educators. Furthermore, the influence of punctuating events, both internal and external, on conversations about bias underscored the importance of addressing bias-related issues within educational settings. These findings collectively contribute to a better understanding of the complex dynamics of bias in education and its impact on teaching and learning activities.

Research Sub-Question D focused on capturing the perspectives of participating educators regarding experiential types of professional development, particularly those delivered through virtual reality (VR) technology. The findings revealed several key themes that help illuminate the impact and potential of VR-based professional development.

One of the prominent themes that emerged from the responses was the participants' limited previous exposure to VR technology. The study participants reported having minimal or no prior experience with VR, either for professional development or personal use. This finding underscored the novelty of VR as a tool for delivering training in an educational context. Most participants entered the study with a fresh perspective on VR, with only one participant, Carrie, having experienced it; in her case, the opportunity occurred in an art exhibit. This theme is consistent with past research that suggests that VR, as a relatively new technology, is unknown to many (Crone & Kallen, 2022).

Despite their limited exposure to VR, participants emphatically described their experience with the VR professional development as engaging. They noted that the immersive nature of VR made the training more captivating and interactive than traditional static professional development sessions. Participants acknowledged that the VR technology held their attention effectively. This theme highlights the potential of VR to enhance engagement in training sessions, potentially making learning experiences more impactful and memorable. Mary and Tatiana, for instance, expressed how VR compelled them to pay closer attention and actively participate in the training. This finding is consistent with much of the other research relative to VR training, including that of Rigot et al. (2022), who found that VR positively impacted engagement. While most participants praised the engaging nature of the VR experience, it's worth noting that some, like Carrie, encountered challenges with the physical control of the VR device. Such technical issues need to be addressed to ensure a seamless and user-friendly experience when VR technology is employed, especially with novice users.

Participants' responses indicated that the VR training had a notable impact on their empathy levels and their understanding of bystander intervention techniques. They reported feeling empathy for the individuals portrayed in the VR scenarios who experienced biased interactions. Many participants expressed that the VR experience provided them with a better perspective on the emotions and experiences of individuals subjected to bias. Furthermore, participants found the VR training effective in demonstrating appropriate ways to intervene when biased interactions are encountered in the workplace. This suggests that VR can be a valuable tool for teaching and practicing skills related to bias mitigation. However, it's essential to note that not all participants were equally impressed by the training. Hannah, for example, found the scenarios presented in the VR training to be simplistic, indicating that the effectiveness of VR-based training may vary based on an individual's prior knowledge and awareness of bias-related issues. Previous literature supports the impact VR has on building user empathy. Roswell et al. (2020) found that participants in a VR training on racism reported higher levels of empathy after their experience.

A recurring theme in participants' responses to Research Sub-Question D was the tendency to refer to "others" when discussing the potential benefits of anti-bias training. This theme reflects participants' reluctance to acknowledge their own potential biases and their own need for self-reflection. Instead, they often deferred the importance of the training to their colleagues or assumed that it would be more beneficial for newer teachers or those educators with less experience with diverse students. This deflection suggests that the personal and sensitive nature of biases may contribute to participants' reluctance to admit that they hold them.

This also highlights the importance of creating a non-judgmental and inclusive environment where educators feel comfortable addressing their own biases and engaging in self-improvement. The basic phenomenon of study participants being less than forthcoming about their own behaviors is not a new one. Extensive literature exists to support omissions or downright lies in participant responses in past research. In fact, it is the subject of entire books. The following quote sums up the premise of one such example: “Everybody lies.... They lie about how often they go to the gym, how much those new shoes cost, whether they read that book. They call in sick when they’re not… People lie to friends. They lie to bosses. They lie to kids. They lie to parents. They lie to doctors. They lie to husbands. They lie to wives. They lie to themselves. And they damn sure lie to surveys” (Stephens-Davidowitz, 2017, p. 82).

In conclusion, Research Sub-Question D shed light on the potential of VR-based professional development to engage educators, enhance empathy, and provide effective bystander intervention techniques. The findings emphasized the novelty of VR in the educational context, underlining the need for further exploration of its impact on teaching practices. Additionally, the theme of deflection towards "others" highlighted the challenges educators face in acknowledging their own biases and the importance of fostering a culture of self-awareness and continuous improvement in addressing bias in education.

Revisiting the Theoretical Frameworks

This study was framed by two existing theories, Punctuated Equilibrium Theory (PET) and Dual Process Theory (DPT), to help explain educators' attitudes and perceptions regarding virtual reality bias identification training and bystander intervention techniques. PET, as described by True et al. (2007), focuses on how major policy developments may occur in response to drastic crises or conflicts, while policies typically align with the status quo during periods of stability. PET emphasizes the importance of feedback, both positive and negative, in driving policy changes. The media and other information sources can also influence this process. In the context of the study, PET informs the understanding of why educators might embrace or resist changes in bias training and interventions, especially in response to recent societal events that highlight issues of bias and racism.

DPT, on the other hand, explains how individuals use two types of thinking processes. Those two types are unconscious (implicit) and conscious (explicit). Implicit biases are automatic and subconscious, while explicit biases are conscious and deliberate. Educators may unconsciously hold implicit biases, impacting their behavior towards students. DPT helps distinguish between these types of biases and can be used to frame questions about how educators recognize and address bias in their practice (Bronstein et al., 2019). The theory informed the study's exploration of how immersive experiences, such as virtual reality training, may affect these biases.

These two theories guided the development of the research questions, instruments, and interpretation of findings in the study. PET helped explain the rapid advancements in bias training and interventions in response to societal pressures, while DPT allowed for an examination of the recognition and manifestations of implicit bias in educators' workplace behavior. The study's interview questions are designed to gather participants' reflections on the applicability of these theories to their experiences, including potential policy reforms and conscious recognition of biases. Overall, PET and DPT provide valuable frameworks for understanding educators' responses to bias training and intervention efforts. In his book, *Subliminal. How Your Unconscious Mind Rules Your Behavior,* Leonard Mlodinow (2012) lends support for the DPT when he states: “Human behavior is the product of an endless stream of perceptions, feelings, and thoughts, at both the conscious and the unconscious levels" (p. 16). He further acknowledges the difficulty that most people have in recognizing that the unconscious is a driving force for their own behavior and suggests that the idea of the unconscious driving behavior was, until the late 1970's, dismissed as pop psychology (Mlodinow, 2012).

PET and DPT were not only helpful in designing this study, but their core theoretical assumptions generally were supported by participant responses. In participant responses to interview questions that specifically addressed the impact of punctuating events on conversations about bias in schools, PET's theoretical framework was supported. Participants all acknowledged the ability of punctuating events to cause change in their school communities via anti-bias initiatives of various types and scopes. Additionally, the DPT framework was also supported by participant responses to interview questions that related to the duality of thought leading to action being either conscious or unconscious. Participants acknowledged that they believed thought was divided into the two categories. Relative to bias most participants reported believing that the unconscious drove educator to justify the prevalence of bias in people whom they otherwise judged as benevolent Participant assignment of biased behavior to the unconscious supports the DPT. Overall, in this study the theoretical frameworks of PET and DPT both proved helpful in design and were generally supported by results.

In this study, two established theories, Punctuated Equilibrium Theory (PET) and Dual Process Theory (DPT), were employed as frameworks to shed light on educators' attitudes and perceptions concerning virtual reality bias identification training and bystander intervention techniques. PET, which focuses on policy developments in response to crises or conflicts, provided insights into why educators might embrace or resist changes in bias training, particularly in response to recent societal events highlighting bias and racism. Meanwhile, DPT, which distinguishes between automatic and subconscious (implicit) biases and conscious (explicit) biases, helped frame questions about how educators recognize and address bias in their practices, particularly in the context of immersive experiences like virtual reality training. These theories guided the research questions, instruments, and potential findings of the study, and participant responses generally supported the core theoretical assumptions of both PET and DPT. Participants acknowledged the influence of punctuating events on policy changes related to bias training and recognized the duality of thought leading to conscious or unconscious biases in themselves and others. Overall, PET and DPT proved valuable in both guiding the study's design and aligning with the responses provided by participants. In the context of this study, both theories proved useful and held up with no need for modification.

Delimitations

Delimitations refer to the researcher's deliberate choices that establish the parameters or boundaries of a study (Theofanidis & Fountouki, 2018). In the context of this study, I focused on delineating the specific aspects I have controlled to define the scope and limits of our research. My research centered on examining the impact of training in implicit bias and bystander intervention techniques within an immersive virtual reality (VR) training program. I intentionally excluded any other phenomena from investigation because my research problem is closely aligned with the chosen phenomenon.

The study's participants consisted of eight public educators, and I confined my research locale to one school district in the central region of North Carolina. To be eligible for inclusion, participants were required to be full-time employees holding professional licenses in public primary or secondary schools during the 2022-2023 school year. These criteria were essential to ensure that participants possessed the necessary knowledge and expertise about school work environments to provide valuable insights addressing my research questions. I did not consider any other individuals as potential participants for this study, as my focus was specifically on public educators in North Carolina.

For data collection, I solely employed semi-structured interviews as my primary source of information. I intentionally excluded any other data sources for this study. This decision was made to maintain a clear and focused approach, aligning with the research objectives, and ensuring that the information gathered through interviews would be adequate for addressing the research questions and objectives effectively.

In summary, delimitations in this study were established to define rigorous boundaries for my research. I specified the scope of our investigation, identified the participants, outlined the geographic region, and determined the data collection method, all in alignment with the research focus and objectives. These deliberate choices were made to ensure the clarity and precision of our study's parameters.

Limitations

In a research endeavor, it is important to acknowledge and address the limitations of the study. They provide valuable context for interpreting the findings and understanding the scope of the research. This section delves into the limitations of this study, shedding light on the constraints, challenges, and sources of error that may have impacted the research process and results. These limitations differ from the delimitations in that they were unexpected and only discovered once the study had commenced. Even though extensive effort was made to conduct a high quality and comprehensive study, it is crucial to recognize the boundaries of this research and the factors that may have influenced its outcomes. By candidly acknowledging these limitations, I aim to enhance the validity of my research, paving the way for future studies to build upon and refine the insights presented.

The first limiting factor in my study was the lack of Hispanic representation among participants in my final participant pool. No Hispanic educators applied. The viewpoint of at least one Hispanic educator was part of this study's original design. Since a great deal of existing literature demonstrates that both Black and Hispanic individuals suffer from the harmful manifestations of bias in the educational setting and generally, the failure to incorporate the viewpoint of a Hispanic educator represents a source of omission in the study's findings.

Another limitation of my study was the short recruitment window for participants to indicate interest in being a part of the study. My recruitment window was approximately 3 weeks. A short recruitment time frame for study participants, typically less than a month, presents several limitations for researchers. First, it can result in a limited sample size. This diminishes the generalizability of study findings. The expedited recruitment process may lead to participant selection bias, as those available and responsive within the brief timeframe may not represent the broader target population, introducing potential problems with the sample. Recruitment becomes a formidable task, particularly when targeting specific populations, demanding increased efforts. A compressed recruitment period also tends to yield a less diverse and heterogeneous sample, limiting researchers' ability to explore variability in participant characteristics and reducing validity. Lastly, the pressure to expedite recruitment can compel researchers to rush planning, data collection, and analysis, potentially compromising the overall quality of the study. To mitigate these limitations, I carefully planned my recruitment strategies, explored extending the recruitment period if necessary, and considered adjusting eligibility criteria. However, the compressed recruitment window did not prohibit me from completing a meaningful study.

The scope of the interview questions seeking to inform Research Sub-Question D, which related to the actual VR experience, could also be considered as a limitation. The questions failed to specifically elicit responses from the participants that indicated whether the experience was transformative for them. This was a missed opportunity to ascertain, with confidence, whether this training was perceived as impactful by the participants in terms of its potential to prompt them to operate in a more equitable manner in their roles. However, the sensitive nature of admitting personal bias, as demonstrated by the previously well supported theme of avoidance of accepting personal responsibility for bias, may have precluded such honest answers regardless of the directness of the interview questions.

The final limitation I experienced in my study was the cost associated with the Virtual Reality (VR) hardware and software. Because of the cost of the Oculus VR headsets (approximately $200) only one set was employed for participant use. This necessitated staggered participant scheduling of sessions in order for the lone machine to recharged and be readied for the next user. This caused only one participant session and interview to be scheduled per day. With more headsets a larger sample size could have been achieved and multiple participants could have been scheduled in a given day. Had the battery life been longer or an AC adapter available back-to-back scheduling could have occurred, saving time and offering more convenient options for participants (such as scheduling multiple sessions on a teacher workday). The cost of the software also served as a limitation as even if more hardware had been available, it is assumed that an additional licensing fee would have been required to load it on each additional headset.

Recommendations for Policy

Incorporating anti-bias training into the professional development of public educators appears, based on my research and that of others, to be an important step to improve inclusivity and equitable practices within the school system. To achieve this, a comprehensive approach involving policy recommendations and innovative techniques, including virtual reality (VR), should be adopted. The recommendations that follow are informed by both the original research findings in this study and by the patterns of findings in the extant body of knowledge that was examined in the literature review.

In terms of policy recommendations, boards of education and legislatures should address the availability of and any requirements for anti-bias training of public educators. Input from parents, faculty, school and district leaders, as well as academics should be gathered and used to design training programs for both in-service and pre-service educators. It will be important to ensure that this training is an ongoing, continuous process rather than a one-time event (Saphier et al., 2008). This approach will allow for the reinforcement of awareness and skills over time. Additionally, state or local curriculum standards should be reviewed and updated to incorporate diverse perspectives, histories, and voices, ensuring that educational materials are inclusive and free from bias (Lindsey & Robins, 2003). Policies and strategies to recruit and retain a diverse teaching workforce should be developed and employed. Those policies should focus on the importance of diverse educators as role models and enhancers of cultural competence within schools but also recognize that White educators can also break the cycle of bias and disproportionate outcomes that plague many school communities. Furthermore, fostering partnerships between schools and the community is essential to collaboratively addressing bias-related issues, engaging parents and local leaders in anti-bias efforts should be a policy focus (Brooks & Watson, (2018).

Incorporating novel techniques like virtual reality (VR) training could significantly enhance anti-bias initiatives. VR-based training programs, as explored in this study, can be integrated into educators' professional development, offering immersive simulations of bias-related scenarios. These simulations enable educators to experience firsthand the impact of bias on students and foster empathy. Other techniques include implementing implicit bias assessments using computerized tools to raise educators' awareness of their own biases and track changes in bias over time. Pre-employment bias assessments could be utilized as part of the hiring process.

Policymakers would be well advised to support culturally responsive teaching strategies that recognize and value students' diverse backgrounds and experiences. School-based policymakers such as the principal or dean of students could utilize professional learning communities or faculty meetings to share best practices for addressing bias. District and statewide policymakers should encourage data-driven approaches to identify bias-related disparities in student outcomes or discipline and use that data to intervene in specific schools and communities (Saphier et al., 2008). Lastly, feedback mechanisms, like the North Carolina Teacher Working Conditions Survey should be adapted so educators can provide input on the impact of bias in their work settings and on the effectiveness of anti-bias training programs and resources to guide policy adjustments needed in the future.

By integrating these policy recommendations with innovative techniques like virtual reality training, educational systems can progress toward creating a more equitable and bias-free learning environment that better serves all students. These efforts have the potential to contribute to improved academic outcomes and the development of culturally competent educators capable of creating a more beneficial educational experience for their students.

Recommendations for Practice

Practitioners in the educational field play a pivotal role in the successful integration of anti-bias training within the realm of public education. The following series of recommendations for classroom teachers and school-leaders alike are believed to be beneficial. First, commitment and leadership are imperative. School administrators and leaders should exhibit unwavering dedication to anti-bias education (Lindsey & Robins, 2003). They can do this by setting an example and establishing clear expectations for educators' participation in anti-bias training. Professional development should be prioritized, emphasizing ongoing learning opportunities that encompass anti-bias training for educators. These opportunities should be easily accessible, relevant, and deeply ingrained in the school's culture. The idea of a "growth mindset," popularized in Carol Dweck's 2006 book *Mindset* would likely be helpful in priming staff for the work ahead and framing it in a way that acknowledges that bias is not a fixed behavior and can be overcome. For school leaders, promoting cultural competence among educators should be considered crucial. This can be exemplified by a school leader encouraging their staff to continually educate themselves about various cultures, identities, and experiences to foster a profound understanding of and support for their diverse student body. Visits to various neighborhoods that are often overlooked and focusing on prioritizing traditionally underserved subpopulations of the student body should be considered as possible ways to assist staff in mitigating biases.

One of the most important practitioner recommendations that this study has yielded is that educators should engage in introspection regarding their own biases and prejudices.

Awareness of how these biases may influence interactions with students is key and required for educators to take effective steps to mitigate bias in their teaching. However, the study results indicate that this introspection may not happen, or be readily acknowledged, and thus produce a blind spot relative to one’s own practices. Such introspection does not happen in a vacuum. Rather, collaborative efforts are essential. Practitioners can promote collaboration among educators, parents, and the community to address bias-related issues collectively and foster opportunities for dialogue.

Specific to teachers and others involved in curriculum design or implementation, infusion of anti-bias principles and practices throughout the curriculum is essential. Educators should weave diverse perspectives and voices into their teaching materials and classroom activities. Creating inclusive classroom environments is important but does not always happen organically. Teachers should establish settings where students from diverse backgrounds feel secure, respected, and valued. This includes the use of inclusive language, avoidance of stereotypes, and addressing bias meaningfully when it surfaces in the classroom.

By incorporating virtual reality (VR) training into educators' professional development, practitioners may spur meaningful positive change in the way bias is viewed and addressed by their staff. VR simulations offer immersive experiences, enabling educators to immerse themselves in scenarios that deepen their understanding of bias and its repercussions. VR trainings are becoming more readily available and more affordable. Instead of waiting for district or state led initiatives to incorporate VR bias training for educators, schools or individuals would be well advised to research and experiment with the technology on their own or with their professional learning communities. In those communities, educators can create a culture where they can freely share experiences, insights, and best practices for addressing bias within the classroom. Additionally, educators could individually participate in implicit bias assessments using computerized tools. These assessments heighten awareness of their own implicit biases and promote self-reflection.

Finally, educators are themselves usually citizens and voters. They have the potential to advocate for culturally responsive teaching strategies that celebrate the diversity of students' backgrounds and experiences. These strategies enhance student engagement and bolster learning outcomes. They can support candidates for leadership positions such as school board members or legislators who recognize that bias exists and who are interested in finding ways to effectively mitigate it.

Recommendations for Future Research

Though this research has produced some findings of importance that have the potential to further the dialogue among policymakers and practitioners alike, it is not exhaustive. Relative to bias, its manifestations, and possible virtual reality (VR) mitigation techniques within public education, more research is warranted. Future research in the field of virtual reality (VR) and its application in bias mitigation holds substantial promise for advancing the understanding and utilization of this technology. Several avenues of research are recommended in the following paragraphs that might further explore its potential.

First, exploring the long-term effectiveness of VR-based bias mitigation interventions is worthy of exploration. Researchers should assess whether the positive effects observed immediately after VR training endure over time, leading to enduring changes in behavior and attitudes or if they fade. In this study, there was some concern that the increase in engagement noted by participants might have been due to the novel nature of the VR technology to them.

Second, research completed in various school districts, especially those without ongoing anti-bias efforts, could offer important comparisons for researchers. Comparative studies not only among districts, but also among different training methods, might help to gauge the efficacy of VR-based bias training. These studies should scrutinize outcomes, retention rates, and the real-world applicability of bias mitigation skills in VR versus non-VR training programs.

Third, customization and personalization of VR training experiences warrant investigation. Tailoring VR scenarios to individuals' unique biases and experiences may amplify the effectiveness of bias mitigation interventions. Additionally, VR experiences that are more specifically designed for educators in settings more familiar to educators may yield interesting results. In this study the scenarios were in corporate settings and all involved adults instead of students.

Fourth, another area for possible research is the transferability of skills acquired in VR training to real-world contexts. Researchers should investigate whether individuals who undergo VR anti-bias training are inclined to apply what they've learned in their day-to-day interactions. These findings could be compared with those of subjects who received static anti-bias training.

Fifth, ethical considerations could be researched further. Researchers could delve into the ethical implications of using VR for bias mitigation. Possible ethical concerns to be explored could be potential unintended consequences like desensitization or reinforcement of biases. Future researchers may want to establish guidelines for ethical VR training (U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2019).

Sixth, and more broadly, research that takes into account the various workplace cultures that exist could yield interesting results. More diverse workplaces could be studied in contrast to more homogeneous ones. The development of a diverse range of VR scenarios addressing various forms of bias, prejudice, and discrimination may be necessary for this type of future research. Collaboration with experts in psychology, sociology, human resource management, and education could facilitate the creation of evidence-based VR content. Research could extend beyond Western contexts, encompassing a global perspective to address biases specific to different cultures and regions.

Finally, as neuroscience evolves and brain imaging techniques improve, neuroscientific studies could be pivotal for comprehending the neural mechanisms underlying bias and any attempts at its reduction. This neuroimaging could be coupled with VR sessions or other computerized bias indicators like the Implicit Association Test (IAT). By doing so, researchers could determine exactly what part of parts of the brain are responsible for bias and any steps taken to mitigate its manifestation. Researchers could explore changes in brain activity associated with empathy (Amodio & Berg, 2022).

The possibilities for future research are plentiful. As psychology and neuroscience continue to advance, I expect even more novel research proposals to be presented regarding bias and its root causes. As the cliché goes, knowledge is power. Considering the immense power bias appears to have relative to equitable outcomes for the nation's millions of school-aged children, the nation's very future, researchers would be well advised to continue to add to the body of knowledge related to this complex subject.

Chapter Summary

A substantial body of research supports the presence of bias within the United States public education system, along with its adverse effects on student outcomes. Moreover, emerging technologies, like virtual reality (VR) sessions, have been studied and have demonstrated promising results in workplace training. Initially, VR training primarily focused on hard skills. The technology was used in applications such as flight simulators and heavy equipment operation simulations. However, recent research has highlighted the potential of VR training for soft skills in multiple work contexts, including human resource training and customer service interactions. Furthermore, limited studies have shown the benefits of VR training in contexts such as assisting medical students in understanding bias and helping teachers respond to stressful situations. While relevant literature and theoretical frameworks like Punctuated Equilibrium Theory and Dual Process Theory inform the expansion of workplace anti-bias training and the understanding of the implicit nature of bias, there is a lack of formal research that explores the intersectionality of VR training and educator preparedness training, especially concerning bias identification and remediation training for educators. This study sought to address that gap by examining the applicability of such training.

This study investigated the perceptions of in-service professional educators concerning bias as a general concept and their reactions to a VR training module designed to expose them to biased workplace interactions and introduce bystander intervention techniques. The participants represented various generations, genders, ethnicities, grade levels, and roles within the educational system. After participating in the VR training, they were interviewed to gain insights into their perceptions of bias in schools and any perceived impact the training may have had on their professional practices or its potential benefits for their colleagues. The results were analyzed for recurring themes that address the research questions.

The participating educators shared several key perceptions with the researcher. They universally noted that the VR platform significantly enhanced engagement compared to more static training methods they had experienced previously. Most participants found value in the VR experience as it allowed them to develop empathy for the individuals in the simulation who were facing bias. Many participants expressed the belief that the VR experience had the potential to positively influence their professional practices or those of their peers. Additionally, participants overwhelmingly emphasized the high perceived importance of understanding, mitigating, and addressing bias in schools due to the multitude of negative effects they have witnessed or envisioned it causing to students.

The study results also revealed that participating educators tended to deflect responsibility for bias in schools to other educators. Though participants openly and freely discussed and acknowledged observing bias in schools they were reluctant to examine their own biases or admit that they might be contributory. Additionally, study participants overwhelmingly ascribed bias to unconscious thought. This appeared to assist in their justification of otherwise good and noble educators engaging in biased behaviors or thought.

This study's findings have utility for policymakers, practitioners, and future researchers. Combining a technology that enhances participant engagement and fosters empathy with subject matter that educators highly value demonstrates the potential of interactive and immersive training programs to address one of the most significant issues in public education. Furthermore, the adaptability of VR simulations to address various challenges educators encounter in pre-service education or in-service continuing education holds promise, as evidenced by the participants' responses to this research experience.

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APPENDICES

Appendix A: Superintendent Permission Letter

January 12, 2023

Dear Superintendent:

My name is Scott Lassiter. I am a doctoral candidate at North Carolina State University. I am writing to request your permission to interview staff members who volunteer to engage with a commercially available virtual reality corporate training module. I would like to ask them about their perceptions of the topic of the virtual reality training that is bias identification and interventions. Additionally, I plan to ask about their own experiences with bias in the workplace and any professional practices that may be impacted through their training session.

My dissertation title is "Educator Perceptions of Virtual Reality Bias Identification Training and Bystander Intervention Techniques." My goal is to examine the perceptions of bias in schools and solicit perception data from practitioners regarding its manifestations, antidotes, and prevalence. The findings may serve to be beneficial as district and school leaders make professional development plans to better serve students.

With your permission, I will interview 7-10 professional staff members of various backgrounds and in all levels. Participants will be diverse. I will collaborate with select and willing principals in order to advertise the study opportunity for their staff. Those that complete the training and interview, which will take approximately 3 hours, will be offered a $50 Visa gift card as a token of appreciation for their time. I will interview the participants using a structured interview protocol where they respond to questions. All interview responses will remain confidential. Neither the district, schools, nor participants will be identified anywhere in the research findings.

Please feel free to contact me if you have any questions or concerns at (919) 749-4259 or srlassit@ncsu.edu. This study has been approved by the Institutional Review Board of North Carolina State University. My dissertation chair is Dr. Michael Ward. He can be contacted at meward@ncsu.edu.

If you agree to my request, please sign the attached form, date it, and send it back to me. Feel free to use the enclosed self-addressed envelope or you can scan and email the permission form to me at srlassit@ncsu.edu.

Thank you for your consideration. I will be happy to give you a copy of the final report upon your request. I am excited about the opportunity to learn about bias and virtual reality's intersectionality in your district.

Thank you in advance,

Scott Lassiter

STUDY CONSENT FORM

By signing and returning this form, I give Scott Lassiter, a doctoral candidate at North Carolina State University, permission to conduct a research study in the ____________Public School System. I acknowledge that Scott Lassiter may conduct virtual reality professional development and complete a participant interview afterwards with participants who will be professional educators in the district. The dates of research are approved in the months of March through May in 2023.

Approved by:

____ _________________________
Signature Date

Superintendent Name: ____

Superintendent Address: ____

Appendix B: Interview Guide

Educator Perceptions of Virtual Reality Bias Identification Training and Bystander Intervention Techniques Interview Guide

Pre-Screening Questions for Maximum Variation of Subjects- Digital survey to collect information on qualifying participants.

Demographic Question A: What level do you work (e.g., elementary, middle, and high school)?
Demographic Question B: How long have you been working in this level?
Demographic Question C: What is your race/ethnicity?
Demographic Question D: What is your gender (e.g., biologically male or biologically female)?
Demographic Question E: What is your age?

After exposure to the VR bias training module on the Oculus headset participants will be interviewed and asked the following interview questions that correspond to each research question.

Research Sub-question A: What are the perceptions of participating educators regarding the recognition of bias and its manifestations in their own workplace behaviors?

Interview question A1: What is your understanding, if any, of the concept of bias?
Interview question A1a: How important is it to you to understand bias?

Interview question A2: What types of bias are you familiar with?
Interview question A2a: How important is it to you to be familiar with various types of bias?

Interview question A3: What are some ways bias might affect your workplace behavior?
Interview question A3a: How important is it to you to know the ways bias affects general workplace behavior?

Interview question A4: How does bias affect your own workplace behavior?
Interview question A4a: How important is it to you to know the ways bias affects your workplace behavior?

Interview question A5: Do you believe most biased interactions with students in the workplace are conscious or unconscious?
Interview question A5a: How important to understand the root causes of biased interactions with students?

Research Sub-question B: What are the perceptions of the participating educators regarding the implications of bias in dealing with conflict such as student behavior management or collegial interactions?

Interview question B1: What are some types of conflicts you have experienced in the workplace with students?
Interview question B1a: How important is it to you to understand the types of conflicts you have experienced in the workplace with students?

Interview question B2: What role, if any, might bias have played in your conflicts with students?
Interview question B2a: How important is it to you to understand what role, if any, bias has played in your conflicts with students?

Interview question B3: What are some types of conflicts you have experienced in the workplace with colleagues?
Interview question B3a: How important is it to you to understand the types of conflicts you have experienced in the workplace with colleagues?

Interview question B4: What role, if any, might bias have played in your conflicts with colleagues?
Interview question B4a: How important is it for you to understand the role bias has played in your conflicts with colleagues?

Interview question B5: What are your thoughts about the degree to which biased interactions in the workplace involving colleagues are conscious or unconscious?
Interview question B5a: How important is it to understand the root causes of biased interactions with colleagues?

Research Sub-question C: What are the perceptions of participating educators regarding the implications of bias for teaching and learning activities such as instructional intervention, talent identification, and special education determinations?

Interview question C1: What are some ways you have heard of bias impacting teaching and learning activities such as instructional intervention, talent identification, and special education determinations?

Interview question C2: What are some ways you have personally seen or been involved in bias impacting teaching and learning activities such as instructional intervention, talent identification, and special education determinations?

Interview question C3: How have you heard of or seen the effects of bias in teaching and learning activities manifest in student outcomes?

Interview question C4: How have you heard of or seen the effects of bias in teaching and learning activities manifest in educator effectiveness?

Interview question C5: How have outside punctuating events (major events that often cause societal change such as the 9/11 terror attacks) in the greater community, or country, affected conversations within your school regarding bias?

Interview question C6: How have internal punctuating events (like a major racial incident among students) in the school affected conversations within the school regarding bias?

Research Sub-question D: How do educators describe the value of experiential types of professional development in changing practice?

Interview question D1: Prior to participating in this study how have you been exposed to virtual reality/experiential professional development?

Interview question D2: If applicable, how would you describe any previous experiential professional development you may have had?

Interview question D3: How would you describe your experience in the virtual reality professional development you participated in as a part of this study?

Interview question D4: What, if any, realizations, or key takeaways did you gain from the virtual reality professional development you participated in as part of this study?

Interview question D5: How might your participation in the virtual reality professional development that was a part of this study impact your professional practices?
Interview question D5a: How important is it for you to improve your professional practices related to bias identification and intervention?

Interview question D6: How might other educators' participation in the virtual reality professional development that was a part of this study impact their professional practices?
Interview question D6a: How important is it to you that other educators improve their professional practice related to bias identification and intervention?

Appendix C: Expert Review Panel Procedural Document

Educator Perceptions of Virtual Reality Bias Identification Training and Bystander Intervention Techniques Interview Guide

Thank you for volunteering to serve on the expert panel for evaluating the interview protocol designed for this study. The purpose of this study is to investigate the perceptions of professional public-school educators regarding bias in schools and a virtual reality-based intervention module. The research will take place in a large suburban district in north-central North Carolina. A small but diverse group of educators will be selected for interview.

Your time, expertise, and assistance are needed to evaluate the content validity of the interview protocol I plan to use. The attached interview outline is designed to identify professional educators' perceptions regarding bias in schools, its real or possible manifestations, and their views on the experiential professional development they have received prior to the interview.

Your feedback and input are very important and appreciated. It will provide useful information about the clarity, appropriateness, and relevance of the interview questions. Your knowledge and expertise in education and understanding of the topics qualifies you to serve as an expert panel member. Your input and feedback may provide insight for possible revisions to the interview protocol.

Please critique the attached interview protocol by answering either "Yes" or "No" to the questions below as well as providing any reasoning that inform your responses receiving a "No" in the space provided.

Questions	Yes	No	If you selected No, please write why, and provide any feedback and/or suggestions that you feel would correct this aspect of the interview.
1. Add a question about whether the directions to participants are clear. 2. Are the interview questions/statements direct and specific?			
3. Are the questions/statements designed in such a way that participants can understand them? *Please note that in order for the interview to be successful, the language should be able to be understood by any*			

licensed professional working in any public school.			
4. Do you feel additional information is needed in order for participants to answer these questions regarding bias in the workplace?			
5. Do the interview questions adequately address factors that will allow the researcher to obtain sufficient information regarding the perceptions of the experiential professional development received through the virtual reality session?			
6. Do the interview questions adequately address factors that will allow the researcher to obtain sufficient information regarding the perceptions of the educators relative to their understanding of bias in general?			
7. Are there any particular items within the interview questions that you would modify?			
8. Are there any questions, or components of questions, that you believe should be excluded from the interview?			
9. Are there any survey items that you feel should be included that are not currently included on the interview guide attached?			
10. Do you have any suggestions related to the “readability” of the interview questions (i.e.: wording of the questions, the order of the questions, etc.)?			